



# Bioengineering Principal Investigators

2023



The virtual TU Delft Bioengineering Institute (BEI) strengthens the campus-wide collaboration of scientists who work on engineering solutions in, with and for biology and links them with external partners. In this booklet you can find profiles of BEI Principal Investigators who are looking for collaboration.

## Contact

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**Nienke van Bommel**

Coordinator Delft Bioengineering Institute

E: [N.vanBommel@tudelft.nl](mailto:N.vanBommel@tudelft.nl)

T: +31 (0)6 14 34 97 03

# Contents

<b>Faculty</b>	<b>page</b>
 Mechanical, Maritime and Materials Engineering	<b>4</b>
 Civil Engineering and Geosciences	<b>40</b>
 Electrical Engineering, Mathematics and Computer Science	<b>52</b>
 Industrial Design Engineering	<b>72</b>
 Aerospace Engineering	<b>76</b>
 Technology, Policy and Management	<b>82</b>
 Applied Sciences	<b>83</b>
<b>A-Z BEI PI index</b>	<b>134</b>

# Ali Akyildiz

Cardiovascular biomechanist looking for microscale imaging physicists, mechanobiologists, and/or cell experimentalists.



## Biomechanical Engineering

Cardiovascular Biomechanics Group

[a.c.akyildiz@tudelft.nl](mailto:a.c.akyildiz@tudelft.nl)

3mE

## About my work

Improved diagnosis and prognosis of diseases, and developing effective preventive strategies and therapies can only be achieved if the healthy tissue mechanics and multifactorial mechanisms involved in the onset and progression of the related pathologies are elucidated. I perform computational and experimental studies to understand healthy and diseased cardiovascular tissues and organs (e.g. vessels, heart) using continuum mechanics approach.

## My main research interests

Cardiovascular tissues/organs | Multiscale modelling | Soft tissue failure

## I am looking for

Mechanobiologists | Microscale imaging physicists | Cell experimentalists

## My expertise and technologies to offer

Soft tissue mechanical experiments | Computational modeling | Clinical & preclinical imaging

# Paul Breedveld

Expert on bio-inspired design in minimally-invasive surgery, 3D printing and soft robotics, looking for biologists, designers and material scientists.



**Biomechanical Engineering**  
Bio-inspired Technology (BITE)  
[P.Breedveld@tudelft.nl](mailto:P.Breedveld@tudelft.nl)

3mE

## About my work

Collaborating with biologists, medical companies and (academic) medical centres, the research within my research group BITE (Bio-Inspired Technology) has resulted in a great number of innovative medical devices, such as multi-steerable instruments and catheters inspired by anatomy of squid tentacles, high-precision biopsy harvesters inspired by chewing organs of sea-urchins, mechanical follow-the-leader instruments inspired by snakes, self-propelled steerable needles and tissue transporters based on ovipositors of parasitic wasps, and integrated-assembly 3D-printed instruments and prostheses designed for low-cost use in developing countries.

## My main research interests

Biomimicry | Soft robotic medical devices | Non-assembly 3D printing

## I am looking for

Biologists | Designers | Material scientists

## My expertise and technologies to offer

Biomimicry | Medical devices | 3D printing

# Dimitra Dodou

Adhesion, soft-tissue grip and experimental methods expert looking for soft polymers, stimuli-responsive polymers, soft matter and soft robotics experts.



## Biomechanical Engineering

Medical Instruments & Bio-Inspired Technology

[D.Dodou@tudelft.nl](mailto:D.Dodou@tudelft.nl)

3mE

## About my work

My research aim is to develop adhesives and adhesive methods that allow for the effective manipulation of soft and wet biological tissue. In other words, my research is concerned with the study of interfacial phenomena between two bodies, where at least one of the two bodies is living, wet, soft, and vulnerable.

## My main research interests

Wet adhesion | Secure and gentle grip

## I am looking for

Soft polymers | Stimuli-responsive polymers | Soft matter | Soft robotics

## My expertise and technologies to offer

Adhesion | Soft-tissue grip | Experimental methods

# Behrooz Fereidoonzhad

Expert in computational modelling and experimental characterisation of soft tissue biomechanics, looking for multiscale imaging experts, biologists, and medical device designers.



**Biomechanical Engineering**  
Cardiovascular Biomechanics Group  
[B.Fereidoonzhad@tudelft.nl](mailto:B.Fereidoonzhad@tudelft.nl)

3mE

## About my work

My research focuses on improving diagnosis, prognosis, and treatment of cardiovascular diseases. I perform multiscale computational and experimental studies on healthy and diseased cardiovascular tissues to provide a better understanding of cardiovascular disease (e.g., stroke, venous thromboembolism, and aortic dissection). I also develop novel bioengineering solutions for treatment of thromboembolism diseases.

## My main research interests

Cardiovascular biomechanics | Multiscale modelling |  
Soft tissue mechanics

## I am looking for

Microscale imaging experts | Biologists | Designers

## My expertise and technologies to offer

Computational modelling | Soft tissue mechanical experiments |  
Multiscale modelling

# Frank Gijzen

Cardiovascular Biomechanics expert, looking for experts in failure mechanics, multiscale modelling, uncertainty quantification and in-silico clinical trials.



## Biomechanical Engineering

Cardiovascular Biomechanics Lab

[f.gijzen@erasmusmc.nl](mailto:f.gijzen@erasmusmc.nl)

3mE

## About my work

I focus on image-based biomechanical modeling of the cardiovascular system. My interests include the influence of blood flow induced wall shear stress on atherosclerotic plaque progression, composition and rupture. I also study plaque biomechanics in order to assess the mechanical stability of plaques. Finally, I recently developed a strong interest in intracranial thrombus mechanics. I combine state of the art finite element analysis of both the blood flow, plaque and thrombus mechanics with the latest clinical imaging modalities and in vitro experimental techniques.

## My main research interests

Cardiovascular blood flow mechanics | Atherosclerotic plaque mechanics | Multiscale modelling of thrombus failure

## I am looking for

Failure mechanics experts | Multiscale imaging of biological tissues | (Micro)mechanical evaluation of local material properties

## My expertise and technologies to offer

Computational Cardiovascular Fluid Mechanics | Experimental methods for mechanical evaluation of soft biological tissues | Clinical imaging of the cardiovascular system



# Mohammad J. Mirzaali

Expert in implementing biomimetic approaches using multi-material 3D printing, looking for experts in bioelectronics, and implantable sensors.



## Biomechanical Engineering

Biomaterials and Tissue Biomechanics

[M.MirzaaliMazandarani-1@tudelft.nl](mailto:M.MirzaaliMazandarani-1@tudelft.nl)

3mE

## About my work

My main research interests concern using biomimetics approaches (e.g., functional gradient, hierarchy) in the design and fabrication of bio-inspired, multi-functional, smart materials. That involves understanding, learning, and mimicking the mechanics and characteristics of natural materials in artificial bioengineering materials. In particular, my research focuses on finding the essential features existing in the design of extreme natural hard-soft connections (such as bone-tendon tissue interface) and developing novel methodology to solve challenges in the field of tissue interface engineering.

## My main research interests

Computational modeling | Tissue Interface Engineering | Biomimetics

## I am looking for

Sensor implementation | Cell mechanobiology | Bioelectronics

## My expertise and technologies to offer

Computational modeling | Multi-material 3D printing | Biological tissue characterization

# Mathias Peirlinck

Soft tissue biophysics modeling expert looking for biologists, imaging experts and experimentalists interested in soft (cardiovascular) tissue behavior.



## Biomechanical Engineering

Cardiovascular Biomechanics Lab

[m dot Peirlinck at tudelft dot nl](mailto:m dot Peirlinck at tudelft dot nl)

3mE

## About my work

My research focuses on the long-life health of the cardiovascular system through improved diagnosis, prognosis and risk assessment. I develop tools to provide an increased understanding of the multiscale behavior of the cardiovascular system, bridging the cell, tissue and organ scale. Using numerical modeling and machine learning techniques, I integrate multifaceted experimental and clinical imaging data into computer models that simulate the (patient-specific) biophysical behavior of the heart and arterial system.

## My main research interests

Cardiovascular biomechanics and electrophysiology |  
Machine learning | Digital twins of soft organs

## I am looking for

Experimental mechanical and electrophysiological testing |  
Multiscale/multimodal/medical imaging experts | Biologists

## My expertise and technologies to offer

Soft tissue biomechanics and electrophysiology | Data-driven modeling of soft tissue behavior | Multiscale modeling

# Selene Pirola

Computational biomechanics expert looking for experts in imaging and AI and/or experimentalists interested in physiological fluid flows and transport phenomena.



**Biomechanical Engineering**  
Cardiovascular Biomechanics Group  
[S.Pirola@tudelft.nl](mailto:S.Pirola@tudelft.nl)

3mE

## About my work

My research combines fluid mechanics, image-analysis and computational modelling to unravel the mechanisms underlying vascular disease and develop new solutions for patient-tailored diagnosis and intervention planning in cardiovascular medicine, following a personalized medicine paradigm. Specifically, I am interested in understanding how vascular disease can instigate neurodegenerative processes causing loss of cognitive function and dementia.

## My main research interests

Vascular flow mechanics & transport | Cardiovascular digital twins | Cerebrovascular flows in neurodegenerative disease

## I am looking for

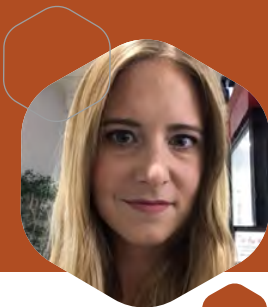
Medical and computational imaging experts | AI experts | Experimentalists interested in physiological fluid flows and transport phenomena

## My expertise and technologies to offer

Cardiovascular mechanics | Computational modelling of vascular flow mechanics & transport phenomena | Clinical imaging of the cardiovascular system

# Aimée Sakes

Medical Device Design expert looking for zoologists, material scientists, and roboticists.



**Biomechanical Engineering**

MISIT-BITE

[A.Sakes@tudelft.nl](mailto:A.Sakes@tudelft.nl)

3mE

## About my work

My research is focussed on the development of innovative soft medical devices for minimally invasive surgery. Specifically, I am researching how to design ultra-slender, and untethered, tools that can be used to safely reach deep inside the body to perform surgery. I take inspiration from nature to find solutions to current healthcare challenges and translate these mechanisms into medical devices. Currently, I am exploring integrating tissues into mechanical structures to create biohybrid devices that combine the best of both worlds.

## My main research interests

Bio-inspired technology | Soft Robotics | Biohybrids

## I am looking for

Zoologists | Material Scientists | Roboticists

## My expertise and technologies to offer

Bio-inspired Technology | Medical Device Design | Soft Surgical Robotics

# Jie Zhou

Materials scientist looking for experts in cyto-, histo-, and hemocompatibility tests.



## Biomechanical Engineering

Biomaterials and Tissue Biomechanics

[J.Zhou@tudelft.nl](mailto:J.Zhou@tudelft.nl)

3mE

## About my work

I develop biodegradable materials for bone replacement, repair or bone tissue engineering. I am interested in understanding their degradation behaviour, changing mechanical performance and interactions with surrounding tissues and body fluids.

## My main research interests

Biodegradable metals and composites | Additive manufacturing

## I am looking for

Experts in cyto-, histo- and hemocompatibility tests

## My expertise and technologies to offer

Alloy design and fabrication technology | Forming technology | Powder technology

# Cosimo Della Santina

We aim to create robots with the same level of precision and dexterity as animals, using a combination of mechanical design, control theory, modeling, and machine learning.



**Cognitive Robotics**  
Learning & Autonomous Control  
[C.DellaSantina@tudelft.nl](mailto:C.DellaSantina@tudelft.nl)

3mE

## About my work

We focus on developing “motor intelligence,” which allows robots to perform complex movements robustly and efficiently. Our group’s work is relevant to biology and medicine because it could lead to new assistive devices that help people with disabilities or injuries move more quickly and shed light on how the human body works. We focus on soft robotics, which involves designing robots inspired by the flexibility and adaptability of animals and can perform complex movements that traditional rigid robots can’t.

## My main research interests

Motor intelligence | Soft robotics | Machine learning

## I am looking for

Modelling of biological and natural systems | Medical applications | Applications in biology

## My expertise and technologies to offer

Robotics | Control theory | Machine learning

# Amir Zadpoor

3D/4D printing, biofabrication and metamaterials expert looking for microbiology, embedded printable electronics and big data.



## Biomechanical Engineering

Biomaterials and Tissue Biomechanics

[A.A.Zadpoor@tudelft.nl](mailto:A.A.Zadpoor@tudelft.nl)

3mE

### About my work

We develop biomaterials with impossible properties (meta-biomaterials) through advanced geometrical designs, multi-material 3D/4D printing techniques, and origami/kirigami methods. Biofabrication at different scales, shape-shifting biomaterials, and embedded functionality are at the core of our expertise. From the clinical viewpoint, we focus on the improved treatment of complex skeletal diseases including large bony defects, implant-associated infections, and multi-tissue lesions (e.g. osteochondral defects). Our ambition is to someday be able to print functional living materials and interface them with their non-living counterparts.

### My main research interests

Bioprinting | Implant-associated infections | Soft robotics

### I am looking for

Microbiology | Embedded printable electronics | Big data

### My expertise and technologies to offer

3D/4D printing | Bioprinting | Surface bio-functionalization

# Matin Jafarian

Systems & control engineer looking for experts in neuroscience and biology interested in/working on memory, plasticity and learning.



**Delft Center for Systems and Control**  
Hybrid, Adaptive and Nonlinear  
[M.Jafarian@tudelft.nl](mailto:M.Jafarian@tudelft.nl)

3mE

## About my work

My research aims at contributing to the mechanistic understanding of human cognition, in particular memory and learning, as well as taking inspiration from the obtained insights to solve engineering problems. I am interested in mathematical models of dynamic neuronal networks underlying cognition, as well as analyzing the local and global behavior of such models.

## My main research interests

Memory, plasticity, and learning | Nonlinear, hybrid and stochastic dynamical systems | Complex networks in bio-inspired engineering

## I am looking for

Neuroscientists | Biologists | Bio-inspired engineering applications

## My expertise and technologies to offer

Modelling and analysis of dynamic networks | Nonlinear, hybrid, oscillating, and stochastic dynamical systems | Coordination and control of dynamic networks



# Raf van de Plas

Molecular imaging and computational mass spectrometry expert looking for molecular imaging applications and problems in big data imaging analysis and analytical chemistry.



**Delft Center for Systems and Control**  
Numerics for Control and Identification (N4CI)  
[raf.vandeplas@tudelft.nl](mailto:raf.vandeplas@tudelft.nl)

3mE

## About my work

Our lab focuses on the interface between three different fields: (1) mathematical engineering and machine learning; (2) analytical chemistry and instrumentation physics; and (3) life sciences and medicine. My research is specifically focused on the computational analysis of molecular imaging modalities such as imaging mass spectrometry and microscopy, and on the mathematical integration of information from different imaging technologies through data-driven image fusion.

## My main research interests

Signal analysis & machine learning | Molecular imaging | Mass spectrometry

## I am looking for

Molecular imaging applications | Big data imaging analysis problems | Computational analytical chemistry problems

## My expertise and technologies to offer

Advanced signal analysis and machine learning methods for imaging | Image fusion between different imaging technologies | Imaging mass spectrometry

# Carlas Smith

Super-resolution microscopy expert looking for bio-applications for super-resolution microscopy, single-molecule imaging and biophysics.



**Delft Center for Systems and Control**  
Numerics for Control and Identification  
[c.s.smith@tudelft.nl](mailto:c.s.smith@tudelft.nl)

3mE

## About my work

There is an urgent need for high-throughput, high-resolution, live-tissue imaging to effectively study the origin, progression, and treatment of human diseases. I take a synergistic approach that considers optics and information aspects together to maximize the recorded information content of a microscope. The technology developments target single-molecule imaging with nanometer-resolution in live-thick tissue.

## My main research interests

Super-resolution | Single molecule kinetics (CoSMoS) |  
Computational imaging

## I am looking for

Bio-applications for super-resolution microscopy | Bio-applications for single-molecule imaging | Bio-applications for biophysics

## My expertise and technologies to offer

Super-resolution microscopy | Single molecule imaging |  
Advanced stochastic signal analysis

# Michel Verhaegen

Numerics for Control and Identification (N4CI) expert looking for large scale network identification and control problems, and high resolution imaging applications with BioData.



**Delft Center for Systems and Control**  
Numerics for Control and Identification  
[m.verhaegen@tudelft.nl](mailto:m.verhaegen@tudelft.nl)

3mE

## About my work

I am interested in retrieving mathematical models of dynamical systems from excitation-response measurements retrieved in dedicated system identification experiments. Current interest focuses on the identification of spatial-temporal dynamical systems with a large number of actuators and sensors.

## My main research interests

Numerical method development for identification of large scale systems | Sensor array networks and control for high resolution imaging

## I am looking for

Large scale network identification and control problems | High resolution imaging applications with BioData

## My expertise and technologies to offer

World class research in System Identification and Control

# Jovana Jovanova

Bio-inspired design expert looking for marine biologists, soft robotics and 4D printing.



**Maritime and Transport Technology**  
Transport Engineering and Logistics  
[j.jovanova@tudelft.nl](mailto:j.jovanova@tudelft.nl)

3mE

## About my work

My research is focused on the design of multifunctional smart structures and systems. Multifunctional design includes smart materials and active components able to perform multiple functions through controlled combinations of structural property adjustments and dynamic behaviour modifications. Applications vary from compliant mechanisms, deployable and metamaterial structures, to adaptive intelligent systems, soft robotics, origami designs, and vibration control. I want to develop bio-inspired large-scale smart structures that take in consideration different properties of smart materials, embedded sensors, actuators and controllers.

## My main research interests

Large scale structures and systems | Design optimization |  
Metamaterial structures for vibration control

## I am looking for

Marine biologists | Soft robotics | 4D printing

## My expertise and technologies to offer

Engineering design optimization | Mechatronics | Smart material integration

# Gabe Weymouth

Unsteady fluid mechanics expert looking for questions in biological swimming and flying and engineering applications of these ideas.



**Maritime Technology & Transport**  
Ship Hydromechanics  
[G.D.Weymouth@tudelft.nl](mailto:G.D.Weymouth@tudelft.nl)

3mE

## About my work

I am the new professor of ship hydromechanics at TUD with a research track on biologically-inspired engineering for swimming and flying. I provided the fluid dynamics know-how in previous collaborative studies on pulse-jet swimming (octopus, squid, jellyfish), plesiosaur swimming, and bat flight; uncovering fundamental mechanics and applying them in robotics applications. I'm interested in talking to bio-mechanics & bio-materials experts with scientific observations & questions as well as mechatronics & sensor & controls experts with technical capabilities & applications.

## My main research interests

High performance swimming and flying | Fluid forces induced by large-scale motion and shape change | Minimally actuated soft underwater robotics

## I am looking for

Bio-mechanics | Bio-materials | Mechatronics

## My expertise and technologies to offer

Fluid mechanics | Numerical methods | Soft robotics

# Sid Kumar

Expert in the intersection of material science, mechanics, and artificial intelligence (AI); looking for collaborations in biomimetics, biomaterials, and biomedical engineering.



## Materials Science and Engineering

Mechanics, Materials and Computing Group

[Sid.Kumar@tudelft.nl](mailto:Sid.Kumar@tudelft.nl)

3mE

## About my work

My group focuses on merging classical physics-based modeling and new AI techniques for understanding the physics of complex materials and designing new materials with tailored, unusual, and beneficial properties. Some of the current applications that we are working on include inverse-designed and biomimetic scaffolds, constitutive model discovery for soft-tissues, nature-inspired impact absorbing materials, among others. We are a computational modeling, design, and optimization-focused group and keen to explore new and diverse applications.

## My main research interests

Materials by design | Computational mechanics | Artificial intelligence

## I am looking for

Biomedical engineering | Bio-inspired design | Additive manufacturing

## My expertise and technologies to offer

Architected and designer metamaterials | Physics-informed AI for design and optimization | Multiscale modelling

# Angelo Accardo

3D microfabrication, mechanical characterization and biomaterials expert looking for 3D Immunofluorescence Imaging, cell biologists and polymer/hydrogel chemists.



## Precision and Microsystems Engineering

Micro and Nano Engineering

[A.Accardo@tudelft.nl](mailto:A.Accardo@tudelft.nl)

3mE

### About my work

The target of my research is to develop multi-scale (nano-micro-meso) 3D fabrication paradigms to address open questions in cell biology. I am interested in particular in the design and fabrication of 3D architectures by employing light-assisted additive manufacturing techniques (such as two-photon lithography and stereolithography). I plan to exploit the 3D engineered microenvironments for studying the mechanobiology and differentiation mechanisms of cells coming from different tissues (e.g. brain, bone) as well as the response of cancer cells to proton therapy.

### My main research interests

3D Engineered Scaffolds | Neuroscience | Mechanobiology

### I am looking for

3D Immunofluorescence Imaging | Cell biologists | Polymer/hydrogel chemists

### My expertise and technologies to offer

3D microfabrication | Mechanical Nanoindenting | Scanning electron microscopy

# Ivan Buijnsters

Materials & Surfaces Engineer looking for biochemists, water/wastewater engineers and surface chemists.



## Precision and Microsystems Engineering

Micro and Nano Engineering

[J.G.Buijnsters@tudelft.nl](mailto:J.G.Buijnsters@tudelft.nl)

3mE

### About my work

The focus of my research is the development of diamond-based functional surfaces and nanomaterials for micro and nano engineering applications. In particular, I work on the synthesis, characterization and application of diamond thin films and nanoparticles for application in (photo)catalysis, electrochemical biosensing, tribology, and water treatment.

### My main research interests

Carbon nanomaterials, particularly diamond |  
Materials synthesis | Surface engineering

### I am looking for

Biochemists | Water/wastewater engineers | Surface chemists

### My expertise and technologies to offer

Tailored diamond materials (e.g. thin-film electrodes, nanoparticles) | Thin film deposition | Materials characterization



# Sabina Caneva

Biophysicist and nanodevices expert looking for biochemists and synthetic biologists.



**Precision and Microsystems Engineering**  
Dynamics of Micro and Nanosystems  
[s.l.caneva@tudelft.nl](mailto:s.l.caneva@tudelft.nl)

3mE

## About my work

I develop novel nanodevices and measurement techniques to manipulate and image DNA and protein nanomechanics. Using a combination of DNA origami nanotechnology, 2D material nanophotonics and acoustofluidics, I work both on fundamental light-sound-matter interactions at the nanoscale and on applications of acoustophotonic devices for molecular diagnostics and delivery in clinical applications.

## My main research interests

2D materials nanodevices | Acoustic tweezers |  
DNA origami nanotechnology

## I am looking for

Biochemists (labelling, surface functionalization) |  
Synthetic biologists | Image processing

## My expertise and technologies to offer

Nanofabrication/nanodevices | Acoustofluidic devices (Surface acoustic wave, bulk acoustic wave) | DNA origami design and assembly

# Murali Ghatkesar

Micro-Nano Engineer looking for single cell biologists, biophysicists and biochemists.



## Precision and Microsystems Engineering

Micro and Nano Engineering

[M.K.Ghatkesar@tudelft.nl](mailto:M.K.Ghatkesar@tudelft.nl)

3mE

### About my work

I am interested in developing micro and nanoscale devices for quantification in biology and chemistry. I use a range of micro and nano fabrication techniques to make these devices. Some of my activities are: pipetting femto-liter volumes of fluid from individual cells, weighing mass of single cell objects and measuring elastic properties of soft objects.

### My main research interests

Micro and Nano fabrication | Micro and nano fluidics | Biophysics

### I am looking for

Single cell biologists | Biophysicists | Biochemists

### My expertise and technologies to offer

Micro and nano fabrication | Single cell biopsy | Atomic force microscopy

# Andres Hunt

Expert in 'smart' material sensors and actuators looking for specialists in (cell) biology, biotechnology, materials science and more.



**Precision and Microsystems Engineering**  
Micro and Nano Engineering  
[a.hunt@tudelft.nl](mailto:a.hunt@tudelft.nl)

3mE

## About my work

I investigate 'smart' material sensors and actuators. These are material level transducers that couple the electrical and mechanical energy domains. My research addresses their manufacturing, improving their performance, and their utilisation in applications. Current and potential application studies include microfluidics, soft robotics, metamaterials, and (spatially) distributed sensing and actuation. I am looking for open problems and collaborations to improve the materials and to create innovative and high-impact applications.

## My main research interests

Smart material sensors and actuators | Manufacturing and prototyping | Metamaterials

## I am looking for

Biology and medical specialists | Materials scientists | Open problems and design collaborations

## My expertise and technologies to offer

Smart material sensors and actuators | Manufacturing | Soft robotics

# Hassan HosseinNia

Advanced motion control, soft actuator and distributed actuator expert looking for precision robotics and abdominal assist device.



**Precision and Microsystems Engineering**  
Mechatronic System Design  
[S.H.HosseinNiaKani@tudelft.nl](mailto:S.H.HosseinNiaKani@tudelft.nl)

3mE

## About my work

I am interested in developing precision motion systems for high-tech as well as medical applications. My current research is twofold: 1) in development of industry standard, easy to use motion controller applying nonlinear strategies and 2) in development of integrated active metamaterial (soft actuator) for vibration damping in precision systems and for actuation in medical application.

## My main research interests

Precision robotics | Precision positioning systems | Precision control

## I am looking for

Precision robotics | Abdominal assist device

## My expertise and technologies to offer

Advanced motion control | Vibration control | Smart material actuator

# Sophinese Iskander-Rizk

Photoacoustic imaging & systems engineering expert looking for tissue/cell engineers, integrated sensor technology, physicists and computer scientists.



**Precision and Microsystems Engineering**  
Micro Optics and Opto Mechatronics  
[S.Iskander-Rizk@tudelft.nl](mailto:S.Iskander-Rizk@tudelft.nl)

3mE

## About my work

My research is about developing imaging solutions for medical problems and advancing medical technology solutions. I have worked on spectroscopic and intravascular/intracardiac photoacoustic imaging of atherosclerosis, radiofrequency ablation for atrial fibrillation and flow, and on super-localization photoacoustic imaging of optically contrasting objects. I research fundamental science/physics of wave and light-tissue interaction phenomena to develop better models and thus engineer better treatment, diagnostic and management tools for the medical field.

## My main research interests

Minimally invasive instruments | Cardiac arrhythmia surgical guidance and monitoring (imaging) | Microscopic and macroscopic multimodal medical imaging

## I am looking for

Tissue/cell electrical activity | Pressure sensor (high bandwidth, high sensitivity) | Computer science/ artificial intelligence

## My expertise and technologies to offer

Photoacoustic & ultrasound imaging systems  
Photoacoustic & ultrasound catheter design

# Urs Stauer

Expert in microfabrication, scientific instrumentation and nanotechnology, looking for cell biologists, polymer scientists, and surface functionalisation.



## Precision and Microsystems Engineering

Micro and Nano Engineering

[U.Stauer@tudelft.nl](mailto:U.Stauer@tudelft.nl)

3mE

### About my work

I design and fabricate instruments and elements of instruments for scientific research in the bio/health field. This involves individual sensors, entire systems like organ-on-chip devices or instruments for in- or ex-vivo measurements. I develop the processes needed for building these instruments.

### My main research interests

Micro and Nano Fabrication | Organ-on-Chip

### I am looking for

Cell biologists | Polymer scientists | Surface functionalisation

### My expertise and technologies to offer

3D Micro and Nano fabrication | Atomic Force Microscopy

# Gerard Verbiest

Expert in ultrasound, 2D materials and Atomic Force Microscopy looking for nanoscale bio-applications.



**Precision and Microsystems Engineering**  
Dynamics of Micro- and Nanosystems  
[G.J.Verbiest@tudelft.nl](mailto:G.J.Verbiest@tudelft.nl)

3mE

## About my work

My aim is (1) to develop revolutionary ultrasound technology to study the subsurface structure of samples with an atomic force microscope and (2) to investigate ultrasound waves in 2D materials for unraveling their heat and sound transport. The goal of these developments is to provide key technologies for the future of electronics, material science and cell biology.

## My main research interests

Nano acoustics | 2D materials | Atomic Force Microscopy

## I am looking for

Microbiologists | Nanofabrication | Surface chemists

## My expertise and technologies to offer

Ultrasound | Atomic Force Microscopy | 2D materials

# Hanieh Bazyar

Chemical engineer and expert in membrane separation technology and microfluidics looking for bio/polymer chemists for developing novel bio-based polymers for advanced applications.



**Process and Energy**  
Energy Technology  
[H.Bazyar@tudelft.nl](mailto:H.Bazyar@tudelft.nl)

3mE

## About my work

I develop novel membranes for different separation applications ranging from wastewater treatment to gas separation. Specifically, I'm interested in understanding the fundamental governing mechanisms as well as the interactions between different species and the membrane material. I focus on investigating potential applications of new bio-based polymers/materials for advanced membrane separations such as stimuli-responsive membranes. Actuation/sensing applications of such materials as well as the biomedical applications (e.g. drug delivery) are also of interest.

## My main research interests

Membrane separations | Bio-based polymers | Stimuli-responsive materials

## I am looking for

Biomedical engineers | Bio/polymer chemists | Microbiologists

## My expertise and technologies to offer

Interface science and wetting properties | Membrane separations | Microfluidics



# Abel-John Buchner

Fluid dynamicist interested in biological systems and biomimetics, looking for biomechanicists, roboticists, and experts in system dynamics and control.



## Process & Energy

Fluid Mechanics

[A.J.Buchner@tudelft.nl](mailto:A.J.Buchner@tudelft.nl)

3mE

## About my work

I study the fundamental dynamics of unsteady flows. I am especially interested in how organisms interact with and manipulate fluids, and how strategies observed in nature can be modelled and applied to problems in flow energy extraction and vehicular propulsion. My work, primarily experimental, focuses on optical flow diagnostics. Current projects include studying mating interactions of mosquitoes, modelling the vortex dynamics inherent to unsteady biopropulsion, and controlling multibody fluid-mediated interactions in systems such as floating wind turbine arrays.

## My main research interests

Fluid mechanics | Biological locomotion | Flow energy extraction

## I am looking for

Biomechanics | Soft robotics | Control theory

## My expertise and technologies to offer

Flow measurement | Reduced order modelling | Statistical mechanics

# Luis Cutz

Thermochemical conversion expert looking for chemical engineers and chemists for valorisation of waste plastic/biomass.



## Process and Energy

Large-Scale Energy Storage

[Luis.Cutz@tudelft.nl](mailto:Luis.Cutz@tudelft.nl)

3mE

## About my work

I develop thermochemical technologies to convert waste materials into new raw materials or biofuels. My research group focuses on understanding waste plastic/biomass from the micro- to the macro-scale using experimental data as an input for our research. This approach allows us to improve the design of our processes, while reducing the impact of non-desirable constituents within these materials that could harm upstream and downstream operation. Based on this approach we can upscale processes from simulation level to laboratory scale.

## My main research interests

Chemical recycling | Biofuels | Bio-based materials

## I am looking for

Chemical recycling know-how | Chemical engineers | Polymer scientists

## My expertise and technologies to offer

Thermochemical conversion | Process system design | Sustainable development

# Burak Eral

Soft matter, crystals and microfluidics guy looking for human cell line culturing know-how, biomineralization and gut bacteria.



## Process & Energy

Intensified Reaction & Separation Systems

[H.B.Eral@tudelft.nl](mailto:H.B.Eral@tudelft.nl)

3mE

## About my work

I focus on understanding the fundamental out-of-equilibrium manufacturing/separation processes involving flow, phase transitions (particularly crystallization) and soft matter/complex fluids. Our approach is to understand how structure/dynamics of soft matter (hydrogels, emulsions, surfactants) and flow can be leveraged to dictate molecular phenomenon (polymorphism, crystallization, phase separation) and, ultimately, harness this understanding to rationally design functional materials and processes.

## My main research interests

Soft matter | Crystallization | Hydrodynamics

## I am looking for

Human cell line culturing know-how | Biomineralization | Gut bacteria

## My expertise and technologies to offer

Crystallization | Microfluidics | Soft matter

# Wiebren de Jong

Thermochemical biomass conversion, biorefinery and energy storage systems expert looking for process system integration, biorefinery and energy storage.



## Process and Energy

Large-Scale Energy Storage

[Wiebren.deJong@tudelft.nl](mailto:Wiebren.deJong@tudelft.nl)

3mE

## About my work

I develop processes for the conversion of biomass/waste possibly integrated with energy storage via electrolysis (CO<sub>2</sub>, water). In the group we perform process system design modelling work as well as experimental development and testing of key components in integrated systems.

## My main research interests

Energy storage concepts | Biorefinery | CO<sub>2</sub> capture and utilization

## I am looking for

Process system integration | Biorefinery | Energy storage

## My expertise and technologies to offer

Process system design and modelling | Bioresources characterization | Fuel conversion testing

# Ruud Kortlever

Electrochemistry and electrocatalysis expert looking for material scientists and biochemists.



**Process & Energy**  
Large Scale Energy Storage  
[r.kortlever@tudelft.nl](mailto:r.kortlever@tudelft.nl)

3mE

## About my work

Our group works on electrocatalytic processes where we can convert small molecules, such as CO<sub>2</sub>, N<sub>2</sub> and water, into fuels and chemical building blocks with the use of electricity. Specifically, we are interested in obtaining molecular understanding how these electrocatalytic reactions proceed, developing new electrocatalytic materials and processes and building prototype electrochemical devices that can showcase the developed technology.

## My main research interests

Electrochemistry | Electrocatalysis | Material science

## I am looking for

Material scientists | Biochemists | Surface chemists

## My expertise and technologies to offer

Electrochemistry | Electroanalytic chemistry | Spectroelectrochemistry (FT-IR and Raman)

# Daniel Tam

(Bio-)fluid dynamicist looking for algae-based bio-process technology, microfabrication for microfluidics (electro-osmosis) and cell biology.



## Process & Energy

Fluid mechanics

[D.S.W.Tam@tudelft.nl](mailto:D.S.W.Tam@tudelft.nl)

3mE

## About my work

Our group investigates the dynamics of active biological fluids involving self-propelled particles. We want to elucidate the origins of the collective behavior observed in many of these dense suspensions (from micro-algae to fish), with the goal of controlling and harnessing this self-generated motion. We use tools from experimental fluid dynamics to track and characterize the dynamics.

## My main research interests

Biological Fluid mechanics | Wet-Soft-Complex-Active matter (!) | Microfluidics

## I am looking for

Algae-based bio-process technology | Microfabrication for microfluidics (electro-osmosis) | Cell biology

## My expertise and technologies to offer

Optical flow diagnostic | 3D-optical tracking of microparticles | Fluid mechanics

# Brian Tighe

Soft matter physicist seeking experts in rheology/mechanics of biological matter.



**Process and Energy**  
Engineering Thermodynamics  
[B.P.Tighe@tudelft.nl](mailto:B.P.Tighe@tudelft.nl)

3mE

## About my work

I aim to understand the mechanics of soft solids, thick fluids, and phase transitions between the two. My research combines theory and simulations to develop models that can predict deformation and flow in foams, emulsions, fibrous networks, and other complex fluids with practical applications.

## My main research interests

Amorphous solids | Complex fluids

## I am looking for

Rheologists | Theorists who can translate biological problems to stat phys/soft matter

## My expertise and technologies to offer

Modeling of soft solids and complex fluids

# Jan-Willem van de Kuilen

Expert in wood and biobased materials in engineering structures looking for material scientists, imaging specialists, non-destructive testing and sustainability experts.



**Engineering Structures**  
Biobased Structures and Materials  
[J.W.G.vandeKuilen@tudelft.nl](mailto:J.W.G.vandeKuilen@tudelft.nl)

CiTG

## About my work

We study wood and biobased materials in sustainable engineering applications. Mechanics and physics of wood and biomaterials, long term behaviour, service life modelling, scanning and non-destructive testing.

## My main research interests

Engineered wood and biomaterials | Structural applications and service life | Mechanics and physics of wood and biomaterials

## I am looking for

Microbiologists | Sensors, Imaging and Non-destructive testing | Sustainable design

## My expertise and technologies to offer

Modelling of performance | Ageing | Structural applications



# Yasmine Mosleh

Material scientist specialised in polymers and composites looking for material scientists, biologists and chemists.



**Engineering Structures**  
Bio-based Structures and Materials  
[Y.Mosleh@tudelft.nl](mailto:Y.Mosleh@tudelft.nl)

CiTG

## About my work

I investigate ageing mechanisms (mechanical, environmental) in organic materials used in high performance engineering structures at different levels of material/structural hierarchy. These materials include polymers, adhesives, fibre reinforced composites, and wood. My aim is to introduce partially or fully bio-based polymers, and fibre reinforced composites for more sustainable engineering structures used in sectors such as civil engineering, aeronautics, wind energy, and automotive. Improving strength, toughness and impact resistance of structures through bio-inspired design is another focus of my research.

## My main research interests

Bio-based materials and bio-inspired material design for engineering structures | Hierarchical materials | Ageing mechanisms and durability enhancement in materials

## I am looking for

Material scientists | Biologists | Chemists

## My expertise and technologies to offer

Accelerated ageing tests | Physical, chemical, and mechanical characterisation of polymeric and composite materials

# Anne-Catherine Dieudonné

Geomechanics expert looking for environmental microbiology, microfluidics and imaging techniques.



**Geoscience and Engineering**  
Geo-Engineering  
[A.A.M.Dieudonne@tudelft.nl](mailto:A.A.M.Dieudonne@tudelft.nl)



## About my work

My research focuses on assessing the impacts of environmental (biological, chemical, thermal, hydraulic) loads on the behaviour of geomaterials and on the performance and resilience of geotechnical structures. I aim to develop new fundamental understanding of multi-physical processes in geomaterials using state-of-the-art imaging, experimental testing and numerical modelling techniques.

## My main research interests

Bio-cementation of soils | Self-healing materials | Discrete element modelling

## I am looking for

Environmental microbiology | Microfluidics | Imaging techniques

## My expertise and technologies to offer

Mechanical testing of geomaterials | Numerical modelling of multi-physics processes

# Julia Gebert

Soil microbiologist looking for microbiology, population analysis (DNA/RNA profiling) and water chemistry.



**Geoscience and Engineering**  
Geo-Engineering  
[j.gebert@tudelft.nl](mailto:j.gebert@tudelft.nl)

CiTG

## About my work

I investigate sediment organic matter and the role of biological organic matter degradation for sediment rheology, contributing to an new definition of the nautical depth and to an improved management of sediments in ports and waterways. Further, I focus on the beneficial use of dredged material as construction material, e.g. in dikes, to achieve circular economy goals. A newly granted project will research methods to stabilise landfilled wastes to reduce future liability for society and create a sustainable environmentally safe situation.

## My main research interests

Greenhouse gas release from riverine sediments | Beneficial use of dredged material | Stabilisation of wastes

## I am looking for

Microbiology | Population analysis (DNA/RNA profiling) | Water chemistry

## My expertise and technologies to offer

Microbial carbon turnover | Microbial methane oxidation | Biogeochemical soil ripening processes

# Henk Jonkers

Bio-adapted building materials expert,  
looking for bio-polymer experts.



**Materials, Mechanics, Management & Design (3MD)**  
Materials & Environment  
[h.m.jonkers@tudelft.nl](mailto:h.m.jonkers@tudelft.nl)

CiTG

## About my work

I develop bio-adapted building materials such as bacteria-based self-healing concrete and bio-receptive concrete. In self-healing concrete specific gram positive non-pathogenic spore forming bacteria together with growth stimulating nutrients are embedded in the concrete matrix in form of a granular 'self-healing agent'. By activation of crack-ingress water spores germinate and active vegetative cells start to precipitate limestone resulting in sealing of cracks. Bio-receptive concrete allows spontaneous and abundant growth of algae, lichens and mosses on its surface improving its environmental performance.

## My main research interests

Microbial ecology | Material science | Environmental engineering

## I am looking for

Bio-polymer science | Encapsulation | Material bio-receptivity

## My expertise and technologies to offer

Microbial ecology | Material science | Environmental Electron microscopy

# Boris van Breukelen

Nature-based subsurface water treatment expert looking for microbiologists.



**Water Management**  
Sanitary Engineering  
[b.m.vanbreukelen@tudelft.nl](mailto:b.m.vanbreukelen@tudelft.nl)

CiTG

## About my work

We perform research to the innovative and sustainable use of the subsurface environment and specifically to climate adaptation technologies that store and abstract water and (geo)thermal energy. Our focus is on water quality treatment (e.g. nutrients, metals, organic micro-pollutants, and pathogens) in aquifers and sand filters. To this end, we combine field research to pilots, field and lab experiments, and coupled physical-chemical-microbiological modelling.

## My main research interests

Reactive (biogeochemical) transport modelling | Field research to nature-based solutions for water storage and treatment | Integrating (ground)water flow, biogeochemistry, and microbial ecology

## I am looking for

Microbial ecologists | Molecular microbiologists | Biofilm and genome-scale metabolic modellers

## My expertise and technologies to offer

Reactive (biogeochemical) transport modelling | Field demos/pilots on subsurface water and thermal energy storage/abstraction | Environmental water quality monitoring and modelling

# Doris van Halem

Drinking water treatment expert looking for engineering microbial communities, antibiotic resistance in water treatment and biofilm characterization.



**Water Management**  
Sanitary Engineering  
[D.vanHalem@tudelft.nl](mailto:D.vanHalem@tudelft.nl)

CiTG

## About my work

We focus on drinking water treatment for global development, with an emphasis in filtration systems for groundwater and household water treatment. Specific examples of research projects are subsurface arsenic removal, biological As (III) oxidation in rapid sand filters, virus removal with low-cost ceramic membranes and safe reuse of water in urban areas.

## My main research interests

Removal of geogenic contaminants (arsenic, fluoride, manganese) | Clever drinking water solutions for global development

## I am looking for

Engineering microbial communities in low nutrient and fast-flowing systems | Antibiotic resistance (genes, bacteria) in water treatment | Biofilm characterisation methods

## My expertise and technologies to offer

Arsenic and iron removal (linking bio to chemical-physical) | Household water treatment for disinfection | Field research in developing countries

# Merle de Kreuk

Wastewater treatment expert looking for enzymes (activity), microbiology (bio-informatics) and computational fluid dynamics (CFD).



**Water Management**  
Sanitary Engineering  
[m.k.dekreuk@tudelft.nl](mailto:m.k.dekreuk@tudelft.nl)

CITG

## About my work

I am Professor of Environmental Technology at the CITG department of water management. I focus on granular sludge processes (aerobic and anaerobic) and (pre)hydrolysis in these systems as well as in anaerobic digestion. Enzymatic (hydrolytic) activity, mixing processes and effect of recalcitrant and inhibiting compounds in these systems are focus points.

## My main research interests

Hydrolysis of complex substrates | Granule formation | Formation of products from wastewater

## I am looking for

Enzymes (activity) | Microbiology (bio-informatics) |  
Computational Fluid Dynamics (CFD)

## My expertise and technologies to offer

Anaerobic digestion processes | Granular sludge for sewage treatment | Process design

# Michele Laurenì

Environmental biotechnologist/  
engineer looking for collaborations  
with bioinformatics experts, systems  
microbiologists, and biochemists.



**Water Management**  
Sanitary Engineering  
[M.Laurenì@tudelft.nl](mailto:M.Laurenì@tudelft.nl)

CiTG

## About my work

My core research interest is to understand how mixed microbial communities (microbiomes) assemble and function, and to translate this fundamental knowledge into ecologically-informed microbiome engineering principles. Specifically, by resolving how different metabolisms are selected and identifying the controls of labour division among community members, my goal is to find new ways to harness microbiomes immense metabolic capabilities into biotechnologies for (waste)water treatment and resource biorecovery. To this end, I integrate lab- and industrial-scale bioreactors with metagenomic and metaproteomics approaches, and mathematical modelling.

## My main research interests

Systems microbiology | Microbial labour division | Nitrogen transforming microorganisms

## I am looking for

Bioinformatics | Genome-centric metagenomics | Biochemistry

## My expertise and technologies to offer

Bioreactors for highly-controlled enrichments | Mathematical modelling | Proteomic and genomic data integration



# Jules van Lier

(Waste)water treatment expert looking for microbial functionality in complex systems.



**Water Management**  
Sanitary Engineering  
[j.b.vanlier@tudelft.nl](mailto:j.b.vanlier@tudelft.nl)

CiTG

## About my work

My research projects focus on closing water cycles in industries and sewage water recovery for industrial or agricultural reuse. I am specialized in Anaerobic Treatment Technology and I received both my MSc and PhD from Wageningen University. I am full professor “Wastewater Treatment/Environmental Engineering” at the section Sanitary Engineering of CiTG, with a 0,2 fte seconded position at UN-IHE, Delft.

## My main research interests

Bio-technologies for (waste)water treatment, from both municipal and industrial origin | Anaerobic treatment (conversion processes) for wastewater, sludges and slurries | Sludge bed systems, (anaerobic) MBR systems

## I am looking for

Microbial functionality in complex systems

## My expertise and technologies to offer

Mixed microbial processes for environmental engineering | Anaerobic conversion processes (microbiology, technology) | (Waste)water treatment in general

# Ralph Lindeboom

Biogeotechnologist looking for thermochemical biomass processing, optics experts and environmental microbiologists.



**Water Management**  
Sanitary Engineering  
[r.e.f.lindeboom@tudelft.nl](mailto:r.e.f.lindeboom@tudelft.nl)

CiTG

## About my work

Both Space and the deep sea offer interesting opportunities for exploring the boundaries of life. Particularly microbial life in hydrothermal vents provides me with the inspiration to develop novel bio-thermochemical resource recovery concepts from (waste-) water. By frugalizing advanced technological solutions in the bioprocess and thermochemical domains, and isolating specialized microbes from extreme environments, I aim to add value to residual streams in the developing world

## My main research interests

Decentralized resource recovery concepts | High pressure anaerobic digestion | Solar thermochemistry | Frugal engineering

## I am looking for

Thermochemical biomass processing | Optics experts | Environmental microbiologists

## My expertise and technologies to offer

High pressure biotechnology | Closed Loop Life Support Engineering | Wastewater treatment | Biogeochemistry

# Marie-Claire ten Veldhuis

Hydrometeorologist looking for in-vivo imaging, microfluidics and in-vivo measurement of water potential and pressure dynamics.



**Water Management**  
Water Resources Group  
[j.a.e.tenveldhuis@tudelft.nl](mailto:j.a.e.tenveldhuis@tudelft.nl)

CiTG

## About my work

My work focuses on using observational datasets to analyze and predict how hydrological systems respond to (extreme) rainfall and drought. Recently, I have become interested in studying hydrology at the nano-scale, looking into water transport in lichens, a fungus-algae symbiosis. I am interested in understanding how water transport is regulated by lichen architecture and more generally in plants to quantitatively model water transport in relation to photochemistry (water oxidation).

## My main research interests

Hydrometeorology | Smart sensing | Citizen science

## I am looking for

In-vivo imaging | Microfluidics | In-vivo measurement of water potential/pressure dynamics

## My expertise and technologies to offer

Hydrology | Rainfall variability | Water systems engineering

# Johan Dubbeldam

Complex network expert looking for (systems) biology, gene regulatory networks, and applications of adaptive networks in general.



DIAM

Mathematical Physics

[J.L.A.Dubbeldam@tudelft.nl](mailto:J.L.A.Dubbeldam@tudelft.nl)

EWI

## About my work

My work focuses on complex networks and dynamical systems. Specifically, I am interested in the properties and dynamics of networks, which includes epidemics on networks, ecological networks and, most recently, gene regulatory networks. I develop simple network models to investigate how network topology and dynamics on the network correlate. This touches on concepts like robustness and resilience of networks. I am also interested in how game theory can be combined with network dynamics to predict the evolution of a system.

## My main research interests

Complex (adaptive) networks | Regulatory networks |  
Critical dynamical systems

## I am looking for

Biologists | Expertise on gene networks | Application of  
evolutionary game theory

## My expertise and technologies to offer

Constructing mathematical models | Investigating stability of network  
models | Applying evolutionary game theory to network models

# Lisanne Rens

Mathematical biologist looking for experimental biologists in cell biology and development, and biophysicists.



**Applied Mathematics**  
Mathematical Physics  
[e.g.rens@tudelft.nl](mailto:e.g.rens@tudelft.nl)

EWI

## About my work

I develop computational models for single cell migration and collective cell migration. I am interested in the interactions with cells and the extracellular matrix. In particular, I study the role of forces (cell traction forces, cell-cell adhesion, extracellular matrix mechanics) on (collective) cell behavior. I also use models of GTPase signaling within the cell and study its effect on migration. I am interested in all kinds of applications, such as blood-vessel formation, embryogenesis, wound healing, cancer metastasis.

## My main research interests

Cell migration | Collective cell behavior | Mechanobiology

## I am looking for

Cell biology | Biophysics | Development

## My expertise and technologies to offer

Cell-based modeling | Computational biophysics | Systems biology

# Havva Yoldas

Applied mathematician looking for applied scientists, experimentalists, and biologists.



DIAM  
Mathematical Physics  
[H.Yoldas@tudelft.nl](mailto:H.Yoldas@tudelft.nl)

EWI

## About my work

I carry out the mathematical analysis of differential equations (ODEs/PDEs) arising in modelling of biological/physical processes, e.g., dynamics of interacting neurons, cells which are growing and dividing, run and tumble movement of bacteria under chemical stimulus. Particularly, I study the long-time behaviour of these equations, determining equilibrium solutions and quantifying convergence rate to the equilibrium. I also build ODE/PDE models for biological phenomena.

## My main research interests

Mathematical analysis | Mathematical modelling |  
Long-term behaviour of biological systems

## I am looking for

Experimentalists who want to build mathematical models based on their data

## My expertise and technologies to offer

Mathematical modelling | Mathematical analysis |  
Numerical simulations

# Jochen Cremer

Expert in modifying machine learning methods for energy systems operations, looking for microbiologists, systems biologists and experimental designers.



**Electrical Sustainable Energy**  
Intelligent Electrical Power Grids  
[j.i.cremer@tudelft.nl](mailto:j.i.cremer@tudelft.nl)

EWI

## About my work

I develop AI-based algorithms that can monitor and control physical systems, mainly focusing on energy systems. In energy systems, the challenge is the high-dimensionality and computational complexity of physical phenomena rendering many conventional approaches from control theory unsuitable for the operation of such systems. I focus on those challenges and derive novel Machine Learning methods that enrich control theory with data to train surrogates from both, the system theory, and studied data.

## My main research interests

Systems biology | Energy systems | Supervised learning

## I am looking for

Microbiologists | System biologists | Experimental designers

## My expertise and technologies to offer

End-to-end analysis of simulations and experiments |  
System theory | Physics-informed machine learning |  
Theoretical modelling and analysis of systems

# Thomas Abeel

Microbial genomics and bioinformatics expert looking for metagenomics and microbial genomics projects.



## Intelligent Systems

Pattern Recognition and Bioinformatics

[t.abeel@tudelft.nl](mailto:t.abeel@tudelft.nl)

EWI

## About my work

I am interested in developing algorithms and visualizations to answer questions in (micro-)biology. Particularly, I am interested to accurately reconstruct the complex heterogeneous genome and transcriptome architectures found in microbial organisms in the medical and industrial domain. The goal is to link genotypes to observed changes in molecular and extended phenotypes of medical or industrial importance, such as antibiotic resistance, virulence or product yield.

## My main research interests

Microbial genomics | DNA sequence analysis algorithms |  
Genomics visualization

## I am looking for

Metagenomics and microbial genomics projects involving DNA, RNA sequencing and other -omics datatypes for integration.

## My expertise and technologies to offer

High performance computing: ~1000 CPU cluster + supporting infrastructure | Bioinformatics for DNA/RNA sequence analysis |  
Oxford Nanopore Technologies sequencing: long-read sequencing



# Jasmijn Baaijens

Bioinformatics expert looking for open problems in microbial genomics and wastewater sequencing.



**Intelligent Systems**  
Pattern Recognition and Bioinformatics  
[J.A.Baaijens@tudelft.nl](mailto:J.A.Baaijens@tudelft.nl)

EWI

## About my work

I am a mathematician turned bioinformatician working on genome reconstruction and analysis for viruses, bacteria and yeasts. More specifically, I develop algorithms and software for reconstruction of microbial genomes from sequencing data, and apply these methods to characterize pathogen diversity in patient or community samples. For example, we can use such algorithms to track mutations or subpopulations over time using wastewater sequencing. Also interested in phylogenetics and outbreak reconstruction.

## My main research interests

Sequencing data analysis | Wastewater-based epidemiology | Microbial evolution

## I am looking for

Microbiologists | Genome sequencing | Epidemiologists

## My expertise and technologies to offer

Sequencing data analysis | Algorithm development | Microbial genomics

# Joana Gonçalves

Computational biologist looking for single cell time series, gene editing and molecular perturbation data.



## Intelligent Systems

Pattern Recognition and Bioinformatics

[joana.goncalves@tudelft.nl](mailto:joana.goncalves@tudelft.nl)

EWI

## About my work

I develop algorithms for pattern discovery in large-scale molecular biology data. Specifically, I am interested in understanding gene regulation dynamics and disruptions involved in disease to discover new therapeutic targets. I focus on pathway effects by integrating genetic variants (DNA), gene expression (RNA) and regulatory landscape including TF binding, epigenetic marks (ChIP) and chromatin organization (Hi-C). Also interested in perturbation data (CRISPR, si/shRNA).

## My main research interests

Gene regulation | Time series | Cancer

## I am looking for

Single-cell time series | Gene editing | Molecular perturbation data

## My expertise and technologies to offer

Data analysis | Pattern recognition | Machine learning

# Marcel Reinders

Bioinformatics, computational biology and machine learning expert looking for single cell biology, long-read sequencing-based biology and molecular neuroscience.



## Intelligent Systems

Pattern Recognition and Bioinformatics

[M.J.T.Reinders@tudelft.nl](mailto:M.J.T.Reinders@tudelft.nl)

EWI

## About my work

I initiated work on molecular classification and genetic network modelling. Nowadays, I focus on sequencing analysis tools, network-based analysis, and integration of genomic data. I have ample experience with finding gene signatures, for example with applications in cancer and neurodegenerative data.

## My main research interests

Relationship (large) structural variations and disease |  
Heterogeneity and its development/expansion of cell systems such as the immune system, brain cells or cancerous tissue |  
Solutions on how to integrate multiple molecular types as well as spatial and temporal data to unravel biological complexity

## I am looking for

Single cell biology | Long-read sequencing-based biology |  
Molecular neuroscience

## My expertise and technologies to offer

Tailored development of novel algorithms to analyse big and/or complex molecular data | Broad statistical and machine learning knowledge | High-performance computing infrastructure and solutions

# Nergis Tömen

Biologically-inspired computer vision researcher, looking for both computational principles to adopt from biological systems and for applications of computer vision.



## Intelligent Systems

Pattern Recognition and Bioinformatics

[N.Tomen@tudelft.nl](mailto:N.Tomen@tudelft.nl)

EWI

## About my work

Many modern and successful computer vision models share fundamental principles with information processing in the brain, and it can be argued that there is still much to learn from biological systems, especially in terms of scale, speed, and efficiency. My research is thus positioned at the intersection of various fields including deep learning for computer vision, neuromorphic computing and neuroscience. Specifically, I am interested in biologically-inspired computer vision, deep network models of biological circuits and spiking neural networks.

## My main research interests

Computer vision | Biologically inspired algorithms | Spiking neural networks

## I am looking for

Computational neuroscientists | Computational biologists | Biological model systems capable of efficient computation

## My expertise and technologies to offer

Computer vision | Machine learning and deep learning | Mathematical models of biological vision

# Jana Weber

Expert on combining machine learning, optimisation, and networks for (bio)chemical reactions, looking for bioprocess engineering, biocatalysis, and experimental partners.



## Intelligent Systems

Pattern Recognition and Bioinformatics

[J.M.Weber@tudelft.nl](mailto:J.M.Weber@tudelft.nl)

EWI

## About my work

I am an environmental engineer with background in network science, machine learning, and optimisation. My work focuses on the development of systematic methods to navigate the (bio)chemical reaction space with respect to environmental performances. Specifically, I am interested in understanding multi-scale interactions between the choice of molecules/proteins, reaction pathways, and the technical realisation of bioprocesses.

## My main research interests

Network/Complexity science | Machine learning | Sustainable bioprocesses

## I am looking for

Biocatalysis | Bioprocess engineers | Biomass valorisation

## My expertise and technologies to offer

Network science | Data analysis | Sustainability assessment

# Tiago Costa

Microelectronics expert looking for functional imaging experts, neuroscientists and material scientists.



**Microelectronics**

Bioelectronics

[T.M.L.daCosta@tudelft.nl](mailto:T.M.L.daCosta@tudelft.nl)

EWI

## About my work

I develop micrometre and millimetre scale integrated circuit chips with monolithically integrated transducers for minimally invasive neuromodulation. Specifically, I am exploring miniaturized focused ultrasound devices for high spatial resolution neuromodulation of the nervous system, either non-invasively (peripheral nerves) or minimally invasively (brain). I am also interested in magnetic neuronal interfaces, and on augmenting integrated circuits chips with novel materials for biomedical applications.

## My main research interests

Integrated circuits and sensors/actuators | Ultrasound neuromodulation | Magnetic neuronal stimulation and recording

## I am looking for

Functional imaging experts | Neuroscientists | Material scientists

## My expertise and technologies to offer

Integrated circuits | Miniaturized smart transducers | Ultrasound neuromodulation

# Justin Dauwels

Machine learning expert looking for neurophysiologists to analyze EEG, MEG, LFP, neuroimaging and behavioral data.



**Microelectronics**  
Circuits and Systems  
[J.H.G.Dauwels@tudelft.nl](mailto:J.H.G.Dauwels@tudelft.nl)

EWI

## About my work

My team develops novel types of machine learning algorithms that combine deep learning with symbolic reasoning. We also work on a variety of applications of machine learning, including machine learning approaches for assessing mental health, for automated analysis of EEG, and for monitoring clinical interventions in the operating room.

## My main research interests

Application of machine learning to human behavioral analysis and physiology

## I am looking for

Neurophysiologists | Psychiatrists | Surgeons

## My expertise and technologies to offer

Machine learning | Signal processing | Computer vision

# Paddy French

(Medical) sensor technology expert looking for biologists and medics to ensure the sensors match their needs.



**Microelectronics**

Bioelectronics

[P.J.French@tudelft.nl](mailto:P.J.French@tudelft.nl)

EWI

## About my work

I have worked in the field of sensors since 1982, and since 1999 with a focus of medical and environmental sensors. In the last years the areas I have worked on include: tissue vitality, cochlear implants, catheter sensors, cancer detection, bone quality, etc.

## My main research interests

Biomedical sensors | Sensor technology and materials | Measurement systems

## I am looking for

Biologists | Medics

## My expertise and technologies to offer

Sensors | Sensor technology | Measurement



# Borbála Hunyadi

Biomedical signal processing expert  
looking for open problems in bio-  
electrical sensor or imaging data.



**Microelectronics**  
Circuits and Systems  
[b.hunyadi@tudelft.nl](mailto:b.hunyadi@tudelft.nl)

EWI

## About my work

I develop signal processing and machine learning solutions for biomedical problems, to unravel healthy and pathological physiology. More specifically, I discover hidden patterns in multichannel and/or multimodal datasets using both supervised (e.g. classification) and unsupervised (e.g. blind source separation) techniques. In order to tackle high-dimensional and higher order (3D+) data, I often use tensor-based techniques. I have many years of experience in epilepsy research using EEG, fMRI and wearable monitoring. I am also interested in ECG and (functional) ultrasound applications.

## My main research interests

Biomedical signal processing | Brain connectivity | Clinical decision support

## I am looking for

Bioelectrical sensors | (Neuro)imaging | Personalized medicine

## My expertise and technologies to offer

Signal processing, in particular multi-channel | (Tensor-based) blind source separation | Pattern recognition

# Tomás Manzaneque

Piezoelectric microsystems expert looking for applications of acoustic waves and vibrations in biophysics and medicine.



## Microelectronics

Electronic Instrumentation

[T.ManzanequeGarcia@tudelft.nl](mailto:T.ManzanequeGarcia@tudelft.nl)

EWI

## About my work

I develop microsystems that use mechanical vibrations to interact with living matter. These devices feature piezoelectric transduction to excite resonances or emit and receive acoustic waves within the chip or to the environment. I am highly interested on the resonant characteristics of mechanical micro-structures to measure physical properties of single cells, such as mass, stiffness or viscosity. In addition, I am willing to explore the possibilities of acoustic waves to actuate on cell cultures or characterize them.

## My main research interests

Resonant and acoustic microsystems | Physical characterization of single cells | Acoustics to interact with cell cultures or tissues

## I am looking for

Cell biologists | Biophysicists | Problems involving mechanical vibrations and living matter

## My expertise and technologies to offer

Micro/nano fabrication | Piezoelectric acoustic devices (SAW, PMUT, etc) | Sensors and actuators

# Massimo Mastrangeli

Micro/nano scientist looking for cell biologists, polymer chemists and plasmonics and optical metamaterials.



## Microelectronics

Electric Components, Technology and Materials

[m.mastrangeli@tudelft.nl](mailto:m.mastrangeli@tudelft.nl)

EWI

## About my work

I am going to develop microfabricated fluidic devices for cell cultures based on silicon and polymers and integrating sensors and actuators to realistically recapitulate the microphysiology of human tissues and organs – we call them microphysiological systems, or organs-on-chip. I am also interested in colloid-based bottom-up assembly of nanodevices, self-organization at all scales and soft microrobotics.

## My main research interests

Microphysiological systems (MPSs) | Bottom-up assembly of nanodevices | Fluidic self-assembly

## I am looking for

Cell biologists | Polymer chemists | Plasmonics and optical metamaterials

## My expertise and technologies to offer

Surface tension effects | Self-assembly | Micro/nanofabrication & Microrobotics

# Dante Muratore

Microelectronics and brain-machine interfaces expert looking for neuroscientists and material scientists.



## Microelectronics

Bioelectronics

[d.g.muratore@tudelft.nl](mailto:d.g.muratore@tudelft.nl)

EWI

## About my work

I design integrated circuits and systems for biomedical applications. Specifically, I am interested in making smarter implantable devices by bringing processing power closer to the sensor with the goal of improving the overall system efficiency and capabilities. I focus on mixed-signal application-specific integrated circuits (ASICs) for bidirectional, single-cell resolution brain-machine interfaces. I am also interested in edge machine-learning circuits for biomedical applications.

## My main research interests

Integrated circuits and systems | Brain-machine interfaces |  
Hardware-algorithm co-design

## I am looking for

Neuroscientists | Microfabrication of electrodes | Biosensors

## My expertise and technologies to offer

Integrated circuits | Low power electronics | Neural signal acquisition

# Clementine Boutry

Biodegradable sensors and flexible electronics expert looking for surgeons and organic chemists.



## Microelectronics

Electric Components, Technology and Materials

[C.M.F.Viellard-Boutry@tudelft.nl](mailto:C.M.F.Viellard-Boutry@tudelft.nl)

EWI

## About my work

My research interests are focused on the development of biodegradable technologies and stretchable electronics for medical applications. Biodegradable sensors and actuators are designed to work for a defined period of time, and then reabsorb naturally without leaving a trace. They are completely degradable, including the electronics for sensor readout and power/data wireless transmission. Stretchable electronics allows a better integration of wearable patches and implants with the skin and organs. We develop soft biodegradable materials with tailored electrical, magnetic and mechanical properties, and their integration into organ-on-chips, biodegradable implantable sensors and robotic manipulators for medical applications.

## My main research interests

Biodegradable sensors & soft robotics | Stretchable electronics | Wireless power/data transfer

## I am looking for

Organic chemists | Surgeons

## My expertise and technologies to offer

Biodegradable technologies | Stretchable electronics |

Micro/nanofabrication, MEMS

# Richard Hendriks

Expert on Biomedical Signal Processing and Modelling, looking for biomedical applications and problems that involve bio-electrical data.



**Microelectronics**  
Circuits and Systems

[R.C.Hendriks@tudelft.nl](mailto:R.C.Hendriks@tudelft.nl)

EWI

## About my work

I develop model based signal algorithms for biomedical applications. In particular, this includes the estimation and detection of biomedical aspects based on data measured using sensor arrays. I often follow a model based approach, starting from the biomedical and physical models, and adapting these in order to combine them with state-of-the-art signal processing algorithms. Among others, examples are cardiac applications (ECG and electrogram-based data) and models that can explain the understanding of speech.

## My main research interests

Cardiac signal processing (ECG, EGM) | Signal processing inspired modelling of biomedical processes | Modelling of speech intelligibility

## I am looking for

Biomedical problems and data | Experts on modelling/simulating (electric) cell behavior | Cardiac applications

## My expertise and technologies to offer

Array processing | Signal processing inspired modelling | Parameter estimation

# Yanki Aslan

Phased array optimization and beam forming expert looking for scientists and engineers in ultrasound neuromodulation, power delivery and imaging applications.



## Microelectronics

Microwave Sensing, Signals and Systems (MS3)

[Y.Aslan@tudelft.nl](mailto:Y.Aslan@tudelft.nl)

EWI

## About my work

My expertise is on steering electromagnetic waves by using phased array antennas. I develop optimization algorithms to improve the beam profiles and reduce complexity and costs. My ambition is to apply and extend my research from electromagnetics to ultrasonics. Specifically, I am interested in establishing innovative beam forming techniques in transducers to achieve simultaneous focusing and steering of acoustic waves in a wide angular range, and applying them to the emerging ultrasound applications.

## My main research interests

Phased arrays | Beam focusing | Neuromodulation

## I am looking for

Neuroscientists | Circuit designers

## My expertise and technologies to offer

Focused ultrasound | High spatial resolution |  
Low off-target stimulation

# Sepideh Ghodrat

Materials expert investigating soft, smart and stimuli-responsive materials for bioengineering and well-being applications.



## Sustainable Design Engineering

Emerging Materials

[s.ghodrat@tudelft.nl](mailto:s.ghodrat@tudelft.nl)

IO

### About my work

I develop and design shape morphing objects with shape memory materials. Shape memory materials are a specific category of smart materials which give free rein to designers' creativity to make interactive objects which have a dynamic relation with users. Shape morphing objects can be used in many domains such as healthcare, biomechanics, robotics or personalized products. A number of good practices have been made such as deployable structures, self-sizable adaptable shoes, self-sizable grips, self-regulating jackets and soft mobile devices.

### My main research interests

Smart, novel, stimuli-responsive materials | Soft and smart actuators | Shape morphing objects

### I am looking for

Biomaterials | Materials testing | Advanced Materials Manufacturing (Additive Manufacturing)

### My expertise and technologies to offer

Shape memory materials (alloys, polymers, composites) | Mechanics of materials, testing, characterization techniques | Manufacturing, 3D printing



## Elvin Karana

Materials and design researcher looking for novel bio-based materials, waste-based materials and materials scientists who are interested in design collaborations.



IO

**Design Engineering**  
Emerging Materials  
[E.Karana@tudelft.nl](mailto:E.Karana@tudelft.nl)

### About my work

My research aims to understand and enhance the relationships people have with the materials of products. I have undertaken this topic with a holistic approach, capitalizing on not only the technical properties of materials, but also meanings, emotions and actions materials in products elicit.

### My main research interests

Material Driven Design | Appreciation of Materials | BioBased Materials

### I am looking for

Novel bio-based materials | Waste-based materials | Materials scientists who are interested in design collaborations

### My expertise and technologies to offer

Experiential characterization of materials | Bridging technical and experiential qualities | Transition of materials into consumer products

# Joana Martins

Microbiologist looking for material scientists, biotechnologists, synthetic biologists and organic chemists to collaborate.



## Sustainable Design Engineering

Materializing Futures

[J.Martins@tudelft.nl](mailto:J.Martins@tudelft.nl)

IO

### About my work

I explore the biotechnological potential of microorganisms for biodesign purposes. Specifically, I am interested to investigate the application of cyanobacteria and microalgae into design, contributing to 'novel materials expressions' and 'sustainability'.

### My main research interests

Microbiology | Biodesign | Living Materials

### I am looking for

Material scientists | Biotechnologists | Organic chemists

### My expertise and technologies to offer

Microbiology | Cyanobacteria/Microalgae | Biotechnology

# Holly McQuillan

3D and multimorphic textile design expert looking for expertise in soft materials, modelling, deployable structures...



## Sustainable Design Engineering

Materializing Futures

[H.L.McQuillan@tudelft.nl](mailto:H.L.McQuillan@tudelft.nl)

IO

### About my work

I develop woven textile systems (fibre, yarn, structure, form, system) that change form, shape, provoke interaction to suggest alternative models of production and end-user relationships.

### My main research interests

Multimorphic textile structures | Animated Textiles

### I am looking for

Anyone curious to explore the intersection of soft materials and structure.

### My expertise and technologies to offer

Textile structures (weaving) | 2D-3D form transformations |  
Designing with soft materials

# Santiago Garcia

Materials scientist looking for biotechnologists to team up with.



## Aerospace Structures and Materials

Novel Aerospace Materials

[s.j.garciaespallargas@tudelft.nl](mailto:s.j.garciaespallargas@tudelft.nl)

LR

### About my work

My team focuses on understanding how dynamic polymers and biobased substances can be used to develop novel polymeric and hybrid materials for engineering applications. Our work is highly multidisciplinary and deals with a range of materials such as coatings, surface treatments and composites. Over the last years we have strongly specialized in developing characterization protocols to better describe the materials behaviour of self-healing/dynamic polymers, coatings and biological substances.

### My main research interests

Responsive coatings and composites | Novel materials from biological systems | Surfaces and interfaces

### I am looking for

Biotechnologists to team up with.

### My expertise and technologies to offer

Functional surfaces and interfaces | Polymer structure-property relationships | Materials characterization

## Baris Kumru

Synthetic polymer chemist looking for experts in polymer composite characterization, biobased products/ catalysis and microfluidics/flow chemistry.



**Aerospace Structures and Materials**  
Aerospace Manufacturing Technologies  
[B.Kumru@tudelft.nl](mailto:B.Kumru@tudelft.nl)

LR

### About my work

I work on the Artificial Intelligence (AI) of small, light-weight flying I have expertise on polymerization reactions, photoinduced chemistry, colloid chemistry and semiconductor modification. Here I want to design monomers and additives for aerospace applications. Sustainability will be given a prime importance, and novel high performance polymers will be formulated. Besides that, I am interested in nanoparticle reinforcement and photoactive materials. Valorisation and utilization of biomass derived molecules towards aerospace applications are governed.

### My main research interests

Polymer materials | Sustainable chemistry | Polymer composites

### I am looking for

Polymer engineering | Biorefining | Biobased products

### My expertise and technologies to offer

Polymerization reactions | Photocatalysis | Carbonaceous materials

# Kunal Masania

Materials scientist and mechanical engineer looking for synthetic biologists, microbiologists and plant scientists.



## Aerospace Structures and Materials

Shaping Matter Lab

[K.Masania@tudelft.nl](mailto:K.Masania@tudelft.nl)

LR

### About my work

We shape matter at multiple length scales using bottom up self-assembly with top down shaping freedom of additive manufacturing. We like to apply bio-inspired design principles to fabricate useful multifunctional materials with applications ranging from energy, biomedical, filtering/catalysis to aerospace.

### My main research interests

Bio-inspired composites | Fabrication using living matter | Data-driven digital design

### I am looking for

Synthetic biologists | Plant scientists | Biohybrid specialists

### My expertise and technologies to offer

Materials science | Additive manufacturing | Mechanics of materials

# Guido de Croon

Expert in AI for robotics looking for biologists with expertise in insect brains & flight behavior.



**Control and Operations**  
Control and Simulation  
[g.c.h.e.decroon@tudelft.nl](mailto:g.c.h.e.decroon@tudelft.nl)

LR

## About my work

I work on the Artificial Intelligence (AI) of small, light-weight flying robots such as the 20-gram flapping wing drone called the “DelFly Explorer”. Such drones form an extreme challenge to AI, because of the strict limitations in onboard sensors, processing, and memory. To tackle this challenge, I draw inspiration from biology, and in particular from flying insects. I study topics such as swarm intelligence, optical flow control, and neuromorphic sensing and computing.

## My main research interests

Insect-inspired Artificial Intelligence | Swarm robotics | Neuromorphic sensing and processing

## I am looking for

Insect flight behavior | Insect brains

## My expertise and technologies to offer

AI for drones (learning, vision, control) | Bio-inspired drones (flapping wing drones)

# Stephanie Cazaux

Planetary sciences expert looking for microbiologists, marine biologists and surface chemists.



## Space Engineering

Astrodynamics and Space Missions

[S.M.Cazaux@tudelft.nl](mailto:S.M.Cazaux@tudelft.nl)

LR

## About my work

I am working with laboratory experiments to understand the formation and evolution of ices (and composition) in conditions similar to our early solar system. I am working on the plumes (crygesers) on icy moons of our solar system and if life could be present in such conditions and how it could be detected by future missions.

## My main research interests

Ices formation, composition, complexity | Formation of the solar system (planets and moons) | Icy moons and sub-surface ocean

## I am looking for

Microbiologists | Marine biologists | Surface chemists

## My expertise and technologies to offer

Laboratory experiments | Models from laboratory to space



# Angelo Cervone

Expert in space propulsion and systems, looking for collaborations on embedded miniaturized systems that can be of bioengineering interest too.



**Space Engineering**  
Space Systems Engineering  
[A.Cervone@tudelft.nl](mailto:A.Cervone@tudelft.nl)

LR

## About my work

I have 20 years expertise in space propulsion at all scales (from large rocket engines to miniaturized thrusters) and, more recently, in the design of small satellite missions for exploration of the Solar System. One of my main challenges in the development of miniaturized propulsion systems is the design of heat exchangers of optimized performance, and embedded MEMS sensors and actuators (micro-valves, micro-pumps). On these topics, I believe that there is very good potential for synergies with the bioengineering community.

## My main research interests

Space micro-propulsion | Green propellants | Small satellites for terrestrial and interplanetary missions

## I am looking for

Microbiologists with research interest in embedded sensors/actuators | Surface chemists

## My expertise and technologies to offer

Miniaturized heat exchangers | Integrated MEMS sensors and actuators | Micro-pumps, micro-valves

# Kateřina Staňková

Game theorist designing data-driven models optimizing cancer therapy, looking for time series data.



## Engineering Systems and Services

Transport and Logistics

[K.Stankova@tudelft.nl](mailto:K.Stankova@tudelft.nl)

TBM

### About my work

I develop data-driven game-theoretical models of cancer and its treatment. Based on these models, I propose evolutionary therapies that target therapy resistance and improve patients' quantity and quality of life. I lead a number of projects, e.g. EU ETN 'EvoGamePlus' and the NWO KLEIN2 project "Understanding cancer through evolutionary game theory and dynamic systems theory".

### My main research interests

Evolutionary game theory | Mathematical oncology | Evolutionary cancer therapy

### I am looking for

Bioinformatics, especially omics | AI | Time-series data producers who want me to help to interpret them/use them for predicting therapy response through mathematical modelling

### My expertise and technologies to offer

Mathematical models of cancer and its treatment | Fitting your data to the mathematical models to predict therapy response  
Optimizing cancer therapies

# Marie-Eve Aubin-Tam

Biophysical engineer looking for crystal formation, polymers and materials characterization.



**Bionanoscience**  
Aubin-Tam Lab  
[m.e.aubin-tam@tudelft.nl](mailto:m.e.aubin-tam@tudelft.nl)

TNW

## About my work

I am interested in the interplay between structure and mechanics in biological molecules and materials. I have two main lines of research: (1) the study of mechanical processes at the cell membrane, and (2) the production of biomineralized composite materials.

## My main research interests

Biomimetic materials | Cell membrane mechanics | Protein conformational dynamics

## I am looking for

Crystal formation | Polymers | Materials characterization

## My expertise and technologies to offer

Microfluidics | Optical tweezers | Biophysics

# Marianne Bauer

Theoretical physicist with a background in transcription. Interested in molecular sensors, biological precision and optimality and how clustering or spatial patterns can improve those.



**Bionanoscience**

[M.S.Bauer@tudelft.nl](mailto:M.S.Bauer@tudelft.nl)

TNW

## About my work

I work on theoretical optimal coding schemes used in efficient sensing of transcription factor molecules, how these efficient sensing schemes could be implemented, and how specific biological constraints affect what optimal sensors look like. I am interested in data on genetic networks, noise in transcription and translation, spatial genome organization and its changes, and stochastic variability in processes where it is assumed that noise should be low. I am also interested in building sensors or gene regulating systems synthetically.

## My main research interests

Gene regulation | Synthetic biology | Precision and noise in biological development

## I am looking for

Biologists (molecular scale, especially gene regulation) | Engineers (for synthetic purposes on the molecular scale)

## My expertise and technologies to offer

Stochastic processes/probability distributions/information theory Simulations | Modeling of clustering and spatial inhomogeneities/patterns

# Greg Bokinsky

Synthetic microbiologist looking for bioinformaticists, biochemists and synthetic chemists.



**Bionanoscience**  
Bokinsky Lab  
[g.e.bokinsky@tudelft.nl](mailto:g.e.bokinsky@tudelft.nl)

TNW

## About my work

We are curious to learn how bacteria work, and in figuring out ways to make bacteria (even more) useful. We have both fundamental and applied projects, and are always happy to pursue research in new and interesting directions.

## My main research interests

Engineering antibiotic production in *E. coli* (yes, it does work) | Growth-rate regulation in bacteria | Genome mining for iron-sulfur cluster enzymes and cofactors in biotechnology

## I am looking for

Bioinformaticists | Biochemists | Synthetic chemists

## My expertise and technologies to offer

Bacterial physiology | Metabolic engineering | Synthetic biology

# Stan Brouns

Microbiologist and genetic engineer looking for bioinformatics, microfabrication and microbiology.



## Bionanoscience

Brouns Lab

[S.J.J.Brouns@tudelft.nl](mailto:S.J.J.Brouns@tudelft.nl)

TNW

## About my work

We are interested in the interaction between microbes and viruses and studies the mechanisms that bacteria and archaea use to protect themselves from virus infection including CRISPR. My lab explores the adaptations that viruses have evolved to avoid defense systems and engineers bacteriophages for phage therapy applications.

## My main research interests

Bacteria | CRISPR | Bacteriophage biology and therapy

## I am looking for

Bioinformatics | Microfabrication | Microbiology

## My expertise and technologies to offer

Microbiology | Virology | Genetic/Genome engineering (CRISPR/Cas9)

# Cees Dekker

Biophysics, nanofabrication and nanobiology expert looking for ultralong DNA, chromatin-related proteins and divisome proteins.



**Bionanoscience**  
Cees Dekker Lab  
[C.Dekker@tudelft.nl](mailto:C.Dekker@tudelft.nl)

TNW

## About my work

We employ single-molecule biophysics techniques to survey a variety of subjects from DNA loop extrusion and supercoiling to nanopore studies of nuclear pore complexes and protein sequencing. More recently, our research has focused on studying chromatin structure and cell division with bacteria on chip for synthetic cells.

## My main research interests

Chromatin biology | Protein sequencing | Synthetic cells

## I am looking for

Ultralong DNA | Chromatin-related proteins | Divisome proteins

## My expertise and technologies to offer

Micro/nanofabrication | Single-molecule biophysics techniques

# Nynke Dekker

Single-molecule biophysicist always interested to work with excellent quantitative scientists interested in innovating in sample preparation, microscopy, or data analysis.



## Bionanoscience

Nynke Dekker Lab

[N.H.Dekker@tudelft.nl](mailto:N.H.Dekker@tudelft.nl)

TNW

## About my work

We study DNA and RNA replication from a single-molecule perspective together with ensemble biochemical assays and electron microscopy. As a single-molecule biophysicist, I am always interested to work with excellent quantitative scientists interested in innovating in sample preparation, microscopy, or data analysis for the benefit of acquiring fundamental knowledge in the biological sciences.

## My main research interests

DNA replication | RNA replication | Single-molecule methodologies

## I am looking for

Biochemistry and surface chemistry | Nanofabrication and nanofluidics | Microscopy

## My expertise and technologies to offer

Biochemistry | Biophysics | Single-molecule techniques



# Martin Depken

Theoretical Biophysicist looking for  
bioinformatics.



**Bionanoscience**  
Depken Group  
[s.m.depken@tudelft.nl](mailto:s.m.depken@tudelft.nl)

TNW

## About my work

I am a theoretical biophysicist specializing in using mathematical/physical modeling to understand how biological function arises from the interactions between molecular components. Of particular interest are the machines that process the information stored in our genomes, and the work is often performed in close collaboration with experimenters.

## My main research interests

Transcription | Crispr-CAS | Method development for single-molecule data analysis

## I am looking for

Bioinformatics

## My expertise and technologies to offer

Theoretical modelling of microscopic phenomena

# Kristin Größmayer

Biophysicist & imaging expert looking for bio-applications for super-resolution & quantitative phase microscopy and for machine-learning/ image processing.



**Bionanoscience**  
Größmayer Lab  
[K.S.Grussmayer@tudelft.nl](mailto:K.S.Grussmayer@tudelft.nl)

TNW

## About my work

Quantitative information at the molecular level, ideally in a physiological context, is key to understanding the physical principles that underly cellular organization and (dys)function. In my group, we combine label-free and single molecule super-resolution fluorescence readouts. We develop smart adaptable microscopes & analysis tools and establish new classes of fluorescent probes to enable e.g., quantification of protein clusters, identification of protein interactions and the assessment of mobility & mechanical properties

## My main research interests

Super-resolution microscopy | Optical engineering | Protein oligomerization & self-assembly in neurodegenerative disease

## I am looking for

Neurobiology | Machine learning/ Image processing | Bio-applications for advanced imaging

## My expertise and technologies to offer

Single-molecule based (super-resolution) imaging and photophysics | 3D quantitative phase imaging | Multiplane imaging

# Timon Idema

Theoretical biophysicist looking for cell biologists and experimental biophysicists.



**Bionanoscience**  
Idema Group  
[t.idema@tudelft.nl](mailto:t.idema@tudelft.nl)

TNW

## About my work

We study collective dynamics in biological and biomimetic systems, ranging in scale from proteins to populations. On the molecular scale, we study self-assembly in realistic (crowded) environments to get a handle on dynamical processes like cellular signalling, cell motility, and cell division. On the population scale, we investigate how tissues and biofilms form, how they can be influenced, and how they respond to perturbations.

## My main research interests

Collective dynamics | Protein interactions | Active matter

## I am looking for

Cell biologists | Experimental biophysicists

## My expertise and technologies to offer

Theoretical modeling of (bio)physical systems

# Arjen Jakobi

Structural biologist looking for micro/nanofluidics, machine learning, image processing and bioinformatics.



**Bionanoscience**  
Jakobi Lab  
[a.jakobi@tudelft.nl](mailto:a.jakobi@tudelft.nl)

TNW

## About my work

We study the structure and function of biomolecular machines. Biomacromolecules adopt intricate three-dimensional arrangements that are critical to their function. We are interested in the molecular mechanisms by which cells defend themselves against infection. Our research uses electron imaging methods to visualize the macromolecular complexes involved in these processes, and applies biochemical and biophysical tools to dissect their mechanism of action.

## My main research interests

Electron cryo-microscopy (cryo-EM) and X-ray crystallography | Structural Biology of pathogen infection | Molecular mechanisms of biomacromolecular machines

## I am looking for

Micro/nanofluidics | Machine learning | Image processing

## My expertise and technologies to offer

Electron microscopy | Protein crystallography | Structural biology

# Chirlmin Joo

Fluorescence expert and single-molecule biophysicist looking for opportunities to collaborate.



**Bionanoscience**  
Chirlmin Joo Lab  
[C.Joo@tudelft.nl](mailto:C.Joo@tudelft.nl)

TNW

## About my work

Using cutting-edge single-molecule fluorescence tools, we investigate how small RNA mediates gene silencing (RNA interference) and anti-viral defense (CRISPR immunity and DNA interference). We apply the mechanistic understanding to genome editing. Furthermore, we develop single-molecule protein sequencing techniques for advanced proteomics analysis.

## My main research interests

Small regulatory RNA | CRISPR bacterial immunity | Single-molecule proteomics

## I am looking for

I am open to explore opportunities for collaboration.

## My expertise and technologies to offer

Single-molecule fluorescence (FRET) | Low light imaging | Optical tweezers (cell manipulation and force sensing)

# Gijsje Koenderink

Cell and tissue biophysicist with experience in cytoskeleton and extracellular matrix mechanobiology, looking for microscopy experts, bio-materials experts, and tissue engineers.



## Bionanoscience

Koenderink Lab for Biological Soft Matter

[g.h.koenderink@tudelft.nl](mailto:g.h.koenderink@tudelft.nl)

TNW

## About my work

We study the material properties of living cells and tissues. Living matter is unique in its ability to combine mechanical strength with active force generation and autonomous change shape. We aim to understand the physical mechanisms that underlie this striking active mechanical behavior. We combine concepts and techniques from soft matter physics, biophysics, synthetic biology, protein engineering, and mechanobiology. We furthermore develop advanced measurement techniques that combine quantitative imaging with force measurements across length scales ranging from the cell/tissue level down to molecular scales.

## My main research interests

Cell biology | Mechanobiology | Active soft matter

## I am looking for

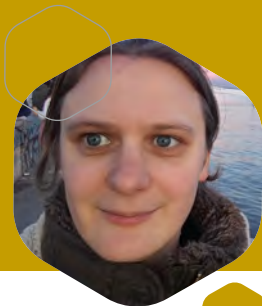
Advanced microscopy | Tissue engineering | Microfluidics

## My expertise and technologies to offer

Rheology | Self-assembly | Advanced microscopy

# Liedewij Laan

Biophysicist looking for bioinformatics and microbial ecology.



**Bionanoscience**  
Laan Lab  
[l.laan@tudelft.nl](mailto:l.laan@tudelft.nl)

TNW

## About my work

My group focusses on evolutionary cell biophysics: how do the self-organisational (physical and chemical) properties of proteins affect the evolutionary dynamics of a biomolecular network? Mostly because it's fascinating, but also to contribute to research on evolutionary processes relevant for human health, such as cancer progression. We combine experimental evolution and quantitative cell biology in yeast, minimal synthetic systems, reaction-diffusion based modelling and bioinformatics.

## My main research interests

Evolutionary biology | Biophysics | Pattern formation

## I am looking for

Bioinformatics | Microbial ecology

## My expertise and technologies to offer

Minimal reconstituted protein systems | Experimental evolution | Yeast cell biology

# Dimphna Meijer

Neuroscientist looking for protein chemists, electrical nanocircuits, and super-resolution imaging



**Bionanoscience**

Meijer Lab

[D.H.M.Meijer@tudelft.nl](mailto:D.H.M.Meijer@tudelft.nl)

TNW

## About my work

My group aims to understand neural circuitry formation on the molecular and atomic level. We use a combination of molecular and cellular biophysics, such as single particle cryo-electron microscopy and high content confocal imaging, to understand how neurons form connections, also known as synapses. The assembly and disassembly of synapses is how we learn – and forget.

## My main research interests

Protein Biochemistry | Biophysics of the Neuronal Synapse | Neurodegenerative disorders (Parkinson, Alzheimer, FTD)

## I am looking for

Protein chemists | Electrical nanocircuits | Super-resolution imaging

## My expertise and technologies to offer

Cell biology | Biochemistry (e.g. protein expression and purification) | Neuroscience (e.g. neurons in a dish)



# Kristina Djanashvili

Medicinal chemistry expert looking for collaborations in biological evaluations of developed multimodal probes, including imaging, toxicity and therapeutic outcome.



**Biotechnology**  
Biocatalysis  
[k.djanashvili@tudelft.nl](mailto:k.djanashvili@tudelft.nl)

TNW

## About my work

Multimodal materials for biomedical applications are gaining momentum thanks to the ability to simultaneously diagnose and treat various cancer at an early stage. The principle is based on the interplay between intrinsic properties of each modality in terms of resolution, sensitivity and therapeutic effect. In my work, I focus on designing such smart hybrid materials with complementary physical properties and develop the routes for their safe and selective delivery to the site of interest.

## My main research interests

Chemistry of imaging and therapy | Small metal-complexes and nanomaterials | Multimodal probes with radio-, magnetic- and optical properties

## I am looking for

MR/Radionuclide imaging | Biological evaluations |  
Optical materials

## My expertise and technologies to offer

Nanomaterials | Organic synthesis and coordination chemistry |  
Advanced Magnetic Resonance methodologies

# Peter-Leon Hagedoorn

Biochemist looking for spectroscopy, thermal imaging, radionuclides and metals in biology.



## Biotechnology

Biocatalysis

[P.L.Hagedoorn@tudelft.nl](mailto:P.L.Hagedoorn@tudelft.nl)

TNW

## About my work

Certain enzymes have metals, and these metal gives them special powers. In order to understand these powers I have developed specific tools (MIRAGE, Nanospec) and use special techniques (calorimetry, EPR spectroscopy) to study these enzymes. This has allowed me to obtain very detailed understanding of the mechanism of action of these enzymes, e.g. the Fe<sup>2+</sup> oxidation mechanism of the universal Fe storage enzyme ferritin. I am expanding this further, developing even better tools, studying novel enzymes and unlocking their secrets.

## My main research interests

Enzyme discovery and engineering | Metalloproteomics in health and biotechnology | Uncovering enzyme mechanisms

## I am looking for

Spectroscopy | Thermal imaging | Radionuclides | Metals in biology

## My expertise and technologies to offer

Protein engineering, expression and purification | Electron paramagnetic resonance | Rapid mixing devices for pre-steady state enzyme kinetics.

# Ulf Hanefeld

Organic chemist with a keen interest in biocatalysis looking for materials scientists and reaction designers.



## Biotechnology

Biocatalysis

[U.Hanefeld@tudelft.nl](mailto:U.Hanefeld@tudelft.nl)

TNW

## About my work

I am an organic chemist with a keen interest in catalysis, and in particular biocatalysis. My expertise lies in C-C bond forming enzymes and hydrolases. In collaboration, I am looking for experts on enzymes in unusual locations, and with strange applications. Computational screening for enzymes and their structures, immobilisation and application in continuous reactions, and people working with reaction design and reactor design would be interesting partners to me as well.

## My main research interests

Green chemistry | Catalysis | Flow chemistry

## I am looking for

Materials scientists | Reaction designers

## My expertise and technologies to offer

Carbon carbon bond synthesis | Enzymes in continuous reactions

# Frank Hollmann

Expert on using enzymes to improve industrial processes, looking for fun collaborations.



## Biotechnology

Biocatalysis Group

F.Hollmann@tudelft.nl

TNW

## About my work

We use enzymes as catalysts for chemical transformations as they have a lot to offer to the chemist in terms of mild reaction conditions and selectivity. Particularly, we are interested in enzymatic oxyfunctionalisation reactions, i.e. hydroxylation of non-activated C-H bonds or epoxidations of C=C bonds.

## My main research interests

Biocatalysis for chemical synthesis | Enzymatic oxyfunctionalisation reactions | Peroxygenases

## I am looking for

Bioinformatics | Protein engineering | Reaction/Reactor engineering

## My expertise and technologies to offer

Biocatalysis | Synthetic organic chemistry

# Ludovic Jourdin

Microbial electrochemical technology expert looking for microbiologists, material science experts and modelling experts.



**Biotechnology**  
Bioprocess Engineering  
[L.Jourdin@tudelft.nl](mailto:L.Jourdin@tudelft.nl)

TNW

## About my work

I develop novel microbial electrochemical technologies for the bioproduction of chemicals, fuels, feed, and food from carbon-containing wastes (e.g. CO<sub>2</sub>) and renewable electricity. I particularly focus on bioreactor designs, fundamental understanding of mechanisms occurring at the electrode surface and within biofilms, process integration, and scale up.

## My main research interests

Chemicals bioproduction | Biofilms | Bioreactor design

## I am looking for

Microbiologists | Material science experts | Modeling experts

## My expertise and technologies to offer

Bioelectrochemistry | Electro-fermentation

# Marieke Klijn

Analytics-based and data-driven bioprocess expert looking for bioprocesses monitoring challenges targeted for development or optimization.



**Biotechnology**  
Bioprocess Engineering  
[M.E.Klijn@tudelft.nl](mailto:M.E.Klijn@tudelft.nl)

TNW

## About my work

My research is focused on implementing analytical techniques in upstream bioprocesses to determine the relation between raw materials, production, and product quality via data analytical frameworks. I am interested to contribute to forward/backward process control and (near) real-time release strategies for a variety of biotechnological processes (industrial, environmental, electrochemical, food, biopharma).

## My main research interests

Data analytics | Process analytical technology |  
Upstream processing

## I am looking for

Microbiology | Emerging bioprocesses | Sensor development

## My expertise and technologies to offer

Protein and bioprocess analytics | Data analysis and visualization  
Automation and control

# Mark van Loosdrecht

Wastewater treatment expert looking for analysis and characterization of complex biopolymers and bioinformatics.



**Biotechnology**  
Environmental Biotechnology  
[M.C.M.vanLoosdrecht@tudelft.nl](mailto:M.C.M.vanLoosdrecht@tudelft.nl)

TNW

## About my work

We study microbial ecology in engineered systems and design of processes for wastewater treatment and resource recovery based on the obtained knowledge. Our focus is on conversions of nitrogen and phosphate, biofilm systems, effect of dynamic process conditions and role of storage and extracellular polymers in microbial processes.

## My main research interests

Biofilm and granular sludge processes | Extracellular polymers | Biological phosphate removal

## I am looking for

Analysis and characterization of complex biopolymers | Bioinformatics

## My expertise and technologies to offer

Microbial ecology | Process design

# Robert Mans

'Cut, Copy, Paste, and Replace' with DNA, engineering with evolution and bio-engines expert looking for (polymer) chemists, bio-informaticians and membrane engineers.



## Biotechnology

Industrial Microbiology/Robert Mans Group

[R.Mans@tudelft.nl](mailto:R.Mans@tudelft.nl)

TNW

## About my work

I develop microbial strains with optimized product formation pathways. My specific focus is on modulation of the efficiency at which microbes harvest energy from chemical conversions. I use targeted strain engineering via techniques such as CRISPR/Cas9 to replace native microbial metabolic pathways and subsequent evolutionary engineering to optimize foreign (heterologous) pathways. In the future I aim to use genetically encoded biosensors to engineer robust industrial microbial strains.

## My main research interests

Membrane transporters | Bio-energetics | Biosensors

## I am looking for

(Polymer) chemists | Bio-informaticians | Membrane engineers

## My expertise and technologies to offer

Microbial evolution | Metabolic engineering | Quantitative bioreactor cultivation



# Rinke van Tatenhove-Pel

Synthetic consortia and flow cytometry expert looking for experts in enzyme-assays, microfluidics and FACS sorting.



**Biotechnology**  
Industrial Microbiology  
[R.J.vanTatenhove-Pel@tudelft.nl](mailto:R.J.vanTatenhove-Pel@tudelft.nl)

TNW

## About my work

My main areas of interest are interactions between cells, strains and species, and the development of high-throughput screening and selection systems. My research combines defined synthetic consortia, predictive models and laboratory experiments, to gain knowledge and insight that I use to improve biotechnological processes. I often work with water-in-oil emulsions as a screening and selection tool.

## My main research interests

Defined microbial consortia | High-throughput screening | Evolution of microbial interactions

## I am looking for

Enzyme assays | Microfluidics | FACS

## My expertise and technologies to offer

Selection in water-in-oil emulsion | Flow cytometry (microbial) | Synthetic consortia

# Tony Kiss

Process Systems Engineering expert with industrial background looking for inter-disciplinary collaborations to develop efficiently novel sustainable (bio)processes.



**Chemical Engineering / Biotechnology**  
Product & Process Engineering / BioProcess Engineering  
[A.A.Kiss@tudelft.nl](mailto:A.A.Kiss@tudelft.nl)

TNW

## About my work

I am a chemical engineer with a dual industrial-academic expertise in key research areas such as: Process Systems Engineering (PSE), Process Intensification, and Separation Technology. My research work is focused on: sustainable process technology, (bio)process design and simulation, process integration and optimization, dynamics and control, intensified fluid separations, enhanced downstream processing, biorefineries and biobased products, and heat pumps applications in the (bio)chemical process industry. In addition, I also develop novel methods and tools for Computer Aided Process Engineering (CAPE).

## My main research interests

Process Systems Engineering | Process Intensification | Separation Technology

## I am looking for

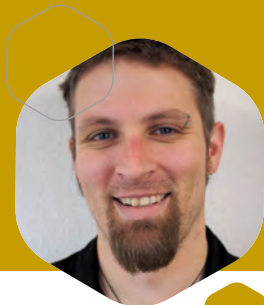
Bioprocesses | Biorefineries | Biobased chemicals and fuels

## My expertise and technologies to offer

Process design and optimization | Intensified fluid separations | Eco-efficient process technology

# Duncan McMillan

Bioelectrochemist, biophysicist and molecular microbiologist looking for microbiologists, nanofabrication and surface chemists.



## Biotechnology

Biocatalysis

[d.g.g.mcmillan@tudelft.nl](mailto:d.g.g.mcmillan@tudelft.nl)

TNW

## About my work

The Membrane Bioenergetics Unit (MBU) is headed by Assistant Professor Dr Duncan McMillan. The overarching theme of the research of the MBU is focused on 'energy and life' exploring microbial physiology using classical microbiology and biochemistry, biomimetic membrane technologies and single-molecule biophysics. With this fundamental knowledge we investigate the adaptations of life to selective environmental pressures with particular focus on the function of the cell membrane, and the role of respiratory enzymes in health and disease.

## My main research interests

Regulation and function of respiratory chain components | The role of metals in respiratory enzymes and their function in electron transfer | Protein-protein and protein-lipid interactions

## I am looking for

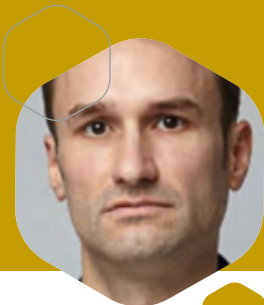
Microbiologists | Nanofabrication | Surface chemists

## My expertise and technologies to offer

Biochemistry of membrane/soluble proteins | Enzyme kinetics | Biomimetic membranes

# Martin Pabst

Protein mass spectrometrist/microbial proteomics and glycoproteins expert looking for bioinformatics, fluorescence imaging and statistics.



## Biotechnology

Cell Systems Engineering

[m.pabst@tudelft.nl](mailto:m.pabst@tudelft.nl)

TNW

## About my work

We are performing research on microbial protein modifications which are utilised to regulate important functions of a cell like for modulating enzyme activities in metabolic pathways. The focus thereby is on cell systems with relevance for industrial applications. Furthermore, we are interested in exploring how microbes work together by characterising biofilm components such as proteins and carbohydrates using meta-proteomics approaches.

## My main research interests

Post-translational protein modifications | Bacterial communities | High-resolution and quantitative mass spectrometry

## I am looking for

Bioinformatics | Fluorescence imaging | Statistics

## My expertise and technologies to offer

High-resolution and quantitative mass spectrometry | Protein chemistry | Proteomics

# Caroline Paul

Biocatalysis and organic chemistry expert looking for materials, bioinformatics, structural biology and more.



**Biotechnology**  
Biocatalysis  
[C.E.Paul@tudelft.nl](mailto:C.E.Paul@tudelft.nl)

TNW

## About my work

Our current research interests are focused on the use of synthetic and orthogonal cofactors for oxidoreductase and transferase enzymes to catalyse chemical reactions, with an emphasis on the development of non-natural enzymatic reactions for applications in pharma- and fine chemical industries. We are interested in exploiting the catalytic mechanism of enzymes, improving the overall robustness of the reaction, and targeting the synthesis of valuable compounds.

## My main research interests

Enzyme-catalyzed reactions | Synthetic and orthogonal cofactors for enzymes

## I am looking for

Other researchers open for collaborations! | Materials  
Bioinformatics | Structural biology

## My expertise and technologies to offer

Biocatalysis | Synthetic organic chemistry

# Cees Haringa

Modelling/fluid dynamics researcher looking for cell-response, process analysis and scale-up challenges, from cell cultures and biorefineries to wastewater treatment.



**Biotechnology**  
Bioprocess Engineering  
[c.haringa@tudelft.nl](mailto:c.haringa@tudelft.nl)

TNW

## About my work

I assess bioprocesses from the cellular point of view: how do cells experience (varying) environments, and how does this affect their response and overall process performance. My expertise is the use of computational fluid dynamics, coupled with cell-response models, to gain insights in industrial processes. These models can be applied towards several goals: process scale-down, strain screening/optimization under industrially representative conditions and process improvement, as well as towards development of new process control tools and digital twins.

## My main research interests

Bioreactor hydrodynamics | Scale-down | Process modelling

## I am looking for

Microbiologists | Bioprocess engineers | Analytical experts

## My expertise and technologies to offer

Computational fluid dynamics | Transport phenomena | Scale-up/scale-down

# Pouyan Boukany

DNA dynamics, bio-microfluidics and cell mechanics expert looking for cell biology, surface modification and high resolution imaging.



**Chemical Engineering**  
Product and Process Engineering  
[P.E.Boukany@tudelft.nl](mailto:P.E.Boukany@tudelft.nl)

TNW

## About my work

My group focuses on fundamental and applied topics in soft living matter, with a major emphasis on controlling and understanding the dynamics and transport of DNA into living cells. To do this, we apply cutting-edge micro/nano-fluidic technologies to manipulate and control the DNA and biomolecules for both fundamental biophysical studies and applications, such as non-viral gene therapy, biosensing and cancer therapy.

## My main research interests

Biophysics | Cell membrane | Molecular crowding

## I am looking for

Cell Biology | Surface modification | High resolution imaging

## My expertise and technologies to offer

Non-viral gene/drug delivery | Microfluidics | Single-cell/DNA manipulation

# Rienk Eelkema

Synthetic organic, polymer chemistry and soft matter expert looking for hybrid materials (living/non-living), functionalization of biomolecules and healthcare materials.



## Chemical Engineering

Rienk Eelkema Lab

[r.eelkema@tudelft.nl](mailto:r.eelkema@tudelft.nl)

TNW

## About my work

Our research is concerned with the design, synthesis, characterization and application of new soft molecular materials. We have a special focus on using in situ chemical reactivity to control the assembly of dynamic materials and the stability of polymers, to make materials that can respond to changes in their environment and their application in drug release, and the selective functionalization of biomolecules.

## My main research interests

Signal transduction in organic materials | Controlled release materials | Selective functionalization of biomolecules

## I am looking for

Hybrid materials (living/non-living) | Functionalization of biomolecules | Healthcare materials

## My expertise and technologies to offer

Synthetic organic chemistry | Self-assembly | Characterization of molecular structure and soft matter microstructures



# Valeria Garbin

Expert in stretching, breaking, and otherwise deforming soft and biological materials looking for microbiology, bioprocessing and tissue engineering.



**Chemical Engineering**  
Transport Phenomena  
[v.garbin@tudelft.nl](mailto:v.garbin@tudelft.nl)

TNW

## About my work

I study soft and biological materials under flow and deformation, particularly the extreme deformation conditions of cavitation (high strain and high strain rate). Extreme deformation conditions due to cavitation are encountered at the tissue level for instance in blast traumatic brain injury; and at the cell level in bioprocessing. In my group we have developed experimental techniques to characterize the coupled fluid dynamics and soft/biological material deformation at high strain rates.

## My main research interests

High-strain-rate deformation of soft/biological materials | Cell rupture due to ultrasound and cavitation | Mechanical phenotyping of cells in microfluidics

## I am looking for

Microbiology | Bioprocessing | Tissue engineering

## My expertise and technologies to offer

High-frequency rheology of soft materials (e.g. hydrogels) | Interfacial rheology (e.g. lipid or protein monolayers, lipid bilayers) | Ultrasound, cavitation and bubble dynamics

# Eduardo Mendes

Advanced soft matter expert looking for cell biologists, neuron experts and immune system experts.



**Chemical Engineering**  
Advanced Soft Matter  
[E.Mendes@tudelft.nl](mailto:E.Mendes@tudelft.nl)

TNW

## About my work

My research focuses on the study of soft (responsive) matter, mainly gels and self-assembled structures and their interface with the living. Using techniques such as microfabrication, printing and microfluidics, I develop (gel) responsive particles or surfaces with potential use in therapy, tissue engineering and sensing (diagnosis).

## My main research interests

Responsive gels | Cell behaviour/interaction with soft surfaces | Sensing

## I am looking for

Cell biologists | Neuron experts | Immune system experts

## My expertise and technologies to offer

Soft Matter processing and properties | Soft Matter characterization | Smart/responsive gels

# Stephen Picken

Polymer materials physicist looking for biobased materials and applications.



**Chemical Engineering**  
Advanced Soft Matter  
[s.j.picken@tudelft.nl](mailto:s.j.picken@tudelft.nl)

TNW

## About my work

I am an expert on polymer materials, in particular in the field of liquid crystal polymers and (bio)polymer nanocomposite based systems. My work is aimed at using modelling and structural characterization methods to elucidate the structure-property relations in such materials, including the dynamics during formation and in the final material.

## My main research interests

(Bio)polymer nanocomposites | Dynamics | Structure-property relations

## I am looking for

Biobased materials and applications

## My expertise and technologies to offer

Structure formation and characterization | Thermal and solution processing | Designer materials

# Luis Portela

Fluid mechanics expert looking for micro-organism models, micro-organisms genetics and dynamics of biological systems.



**Chemical Engineering**  
Transport Phenomena  
[l.portela@tudelft.nl](mailto:l.portela@tudelft.nl)

TNW

## About my work

My research focus on complex engineering flows, in particular, involving multiphase flow and turbulence. I am interested in theoretical, numerical and experimental work. My work covers a wide range of topics, from fundamental studies on particle-laden turbulent flows, to multiphase flows in (bio) chemical processes. I am interested in studying bio-reactors from an holistic perspective, combining the micro-organisms (genetic) aspects with the entire fluid transport processes.

## My main research interests

Fluid Mechanics | Complex Systems | Phenomenological Modelling

## I am looking for

Micro-organisms models | Micro-organisms genetics | Dynamics of biological systems

## My expertise and technologies to offer

Fluid Mechanics | Numerical Methods | Experimental Techniques

# Alina Rwei

Drug delivery and bioelectronics expert looking for computational modelling of self-assembled lipid/polymeric systems and signal processing.



**Chemical Engineering**  
Product and Process Engineering  
[A.Y.Rwei@tudelft.nl](mailto:A.Y.Rwei@tudelft.nl)

TNW

## About my work

My work merges the two pillars of healthcare technologies: diagnostic systems and therapeutics, with the goal of achieving a closed-loop therapeutic system, in which therapeutics can be release based on real-time physiological states of a patient. More specifically, the diagnostic systems I am focusing on are soft, miniaturized wearable and implantable electronics; the therapeutic systems I focus on are actively-triggerable smart drug delivery systems, such as light- and ultrasound-triggerable release of local anaesthetics to achieve on-demand pain relief.

## My main research interests

Smart drug delivery systems | Wearable and implantable soft bioelectronics | Pain therapy

## I am looking for

Computational modelling | Machine learning | In vivo imaging

## My expertise and technologies to offer

Drug-encapsulating particles | Stretchable sensors

# Artur Schweidtmann

Artificial Intelligence (AI) expert  
looking for joint machine learning (ML)  
and optimization projects with bio  
partners.



**Chemical Engineering**  
Product and Process Engineering  
[A.Schweidtmann@tudelft.nl](mailto:A.Schweidtmann@tudelft.nl)

TNW

## About my work

I am a chemical engineer with background in machine learning, artificial intelligence, and optimization. For example I design algorithms for automated experimental setups for the optimization of yield and selectivity.

## My main research interests

Machine learning | Artificial intelligence | Optimization

## I am looking for

Interesting research collaborations that have a positive impact on our society.

## My expertise and technologies to offer

Data analysis | Optimization | Self-optimization with automated experiments in the loop

# Ana Somoza-Tornos

Expert in the modelling, assessment and optimization of chemical processes looking for experts in biofuels and biochemicals.



**Chemical Engineering**  
Product and Process Engineering  
[A.SomozaTornos@tudelft.nl](mailto:A.SomozaTornos@tudelft.nl)

TNW

## About my work

I work on developing Process Systems Engineering tools to address the closure of carbon cycles in the chemical industry via the introduction of carbon capture and utilization and chemical recycling technologies. My areas of expertise include process modelling and design, mathematical optimization, techno-economic assessment, life cycle assessment and circular economy.

## My main research interests

Process Systems Engineering | Sustainability | Circular Economy

## I am looking for

Biofuels | Biochemicals

## My expertise and technologies to offer

Chemical process design | Mathematical optimization

# Daan Brinks

Neurophysicist looking for protein evolution, biostatistics and genome editing.



**Imaging Physics**  
The Brinks Lab  
[d.brinks@tudelft.nl](mailto:d.brinks@tudelft.nl)

TNW

## About my work

My lab addresses neuroscience questions through functional imaging. We develop tools with roots in physics, biochemistry, optics, mathematics and nanofabrication and we're interested in how brain cells work on every level, from biophysical principles to consequences in behavior and from subcellular compartments to complete organisms. Our main workhorses right now are Genetically Encoded Voltage Indicators, which we develop and apply.

## My main research interests

Multiphoton voltage imaging | Functional nanoscopy | The role of bioelectricity in embryonic development

## I am looking for

Protein evolution | Biostatistics | Genome editing

## My expertise and technologies to offer

Nonlinear imaging | In vitro & In vivo functional imaging | Neuroscience



# Elizabeth Carroll

Opto-neuro-bio-physicist looking for experts in molecular biology, developmental biology and neuroscience.



**Imaging Physics**  
Zebrafish Development Lab  
[e.c.m.carroll@tudelft.nl](mailto:e.c.m.carroll@tudelft.nl)

TNW

## About my work

My lab uses interdisciplinary science and engineering approaches to develop optical imaging methods for the study of animal physiology. We design unique microscopes and novel biosensors that make it possible to combine multiple scales of spatial, temporal, and chemical resolution. With the tools we build, we address systems-level questions from neurobiology, immunology and toxicology using zebrafish as a small animal model.

## My main research interests

Neuro/endocrinology | Systems biology | Neuroscience

## I am looking for

Molecular biology | Developmental biology | Neuroscience

## My expertise and technologies to offer

Zebrafish | Light sheet microscopy | Optogenetics

# Hylkje Geertsema

Single-molecule and super-resolution microscopy expert looking for spatial, temporal and spatiotemporal analysis of biological processes *in vitro* and in cells.



TNW

## Imaging Physics

[H.J.Geertsema@tudelft.nl](mailto:H.J.Geertsema@tudelft.nl)

### About my work

I perform single-molecule imaging and super-resolution microscopy to obtain spatiotemporal information on biological processes in eukaryotic cells, especially in the nucleus. In specific, my interest lies in understanding how DNA replication is initiated and how it is regulated in space and time during the cell cycle. I focus on single proteins, e.g. PCNA, within the DNA replication machinery by imaging single proteins that are genetically fused to a fluorescent protein *in vivo* or by super-resolution microscopy with DNA-PAINT *in situ*.

### My main research interests

Super-resolution microscopy | Single-molecule imaging | DNA replication

### I am looking for

Cell biologists | Biological processes in the nucleus | Cellular labelling methods

### My expertise and technologies to offer

Single-molecule imaging | DNA-PAINT | Cellular labelling methods

# Jeroen Kalkman

Imaging expert fascinated by optical tomography looking for life scientists with challenging imaging problems.



**Imaging Physics**  
Kalkman Lab  
[J.Kalkman@tudelft.nl](mailto:J.Kalkman@tudelft.nl)

TNW

## About my work

I am fascinated by optical tomography and making cool imaging tools. My focus is on label-free imaging in 3D with optimal imaging performance (resolution, speed, and volume) and quantification of sample parameters. Besides a focus on quantitative zebrafish imaging, we also measure the composition of flowing (bio) suspensions, biofilm growth, plant morphology, and tissue morphology.

## My main research interests

Optical tomography | Optical signal processing | Zebrafish

## I am looking for

Life scientists with challenging imaging problems

## My expertise and technologies to offer

Optical tomography | Optical signal processing | Microscopy

# David Maresca

Ultrasound imaging expert looking for protein engineering and synthetic biology.



## Imaging Physics

Medical Imaging/Maresca Lab

[d.maresca@tudelft.nl](mailto:d.maresca@tudelft.nl)

TNW

## About my work

Visualizing cellular processes occurring deep with living organisms is essential to our understanding of biology and disease. To address this challenge, we pursue fundamental advances at the interface of ultrasound imaging and molecular engineering, taking advantage of the discovery of acoustic biomolecules to interface ultrasound waves with cellular processes.

## My main research interests

Biomedical ultrasound imaging | Ultrasound imaging of neural activity

## I am looking for

Protein engineering | Synthetic biology

## My expertise and technologies to offer

Biomolecular ultrasound imaging | Hemodynamic functional ultrasound imaging of neural activity | Genetically encoded acoustic biomolecules (also known as gas vesicles)

# Miriam Menzel

Scattered light microscopy and neuroimaging expert looking for fibrous tissue/biopsy samples and experts in multi-modal imaging, histo(patho)logy, and sample preparation.



**Imaging Physics**  
Menzel Lab  
[M.Menzel@tudelft.nl](mailto:M.Menzel@tudelft.nl)

TNW

## About my work

I am a physicist with background in neuroimaging and biomedical optics. My lab exploits the scattering of visible light to resolve complex fiber structures in biological tissues. In particular, we further develop Computational Scattered Light Imaging – a label-free imaging technique that resolves individual fiber pathways and their crossings with micrometer resolution. The technique can be applied to different kinds of fibrous structures, and we are always looking for biological tissue samples and new applications.

## My main research interests

3D-reconstruction of fibrous tissue structures | Non-invasive, label-free neuroimaging | Multi-modal imaging and cross-validation

## I am looking for

Histo(patho)logy, biopsy tissue samples | Neurodegenerative diseases | Multi-modal imaging/microscopy

## My expertise and technologies to offer

Neuroimaging & biomedical microscopy | Label-free, high-resolution visualization of dense/interwoven fiber structures | Computational Scattered Light Imaging

# Sjoerd Stallinga

Expert in optical engineering in general and super-resolution microscopy in particular looking for applications in (single-molecule) imaging and sensing using optics.



## Imaging Physics

Computational Imaging

[S.Stallinga@tudelft.nl](mailto:S.Stallinga@tudelft.nl)

TNW

## About my work

My research focuses on the intersection between the fundamentals and engineering of optical imaging systems and image processing algorithms (“computational imaging”). This combination makes it possible to see what cannot be made visible with conventional optical imaging instrumentation. We apply this to super-resolution microscopy to achieve nanometer resolution, and to develop automated slide scanning solutions for digital pathology.

## My main research interests

Computational imaging | Optical engineering | Super-resolution microscopy

## I am looking for

Microbiologists | Nanofabrication | Surface chemists

## My expertise and technologies to offer

Optical design and modeling | Image analysis

# Qian Tao

Artificial intelligence researcher looking for intriguing biomedical image quantification and data understanding problems.



## Imaging Physics

AI for Medical Imaging

[Q.Tao@tudelft.nl](mailto:Q.Tao@tudelft.nl)

TNW

## About my work

I develop algorithms for understanding image and data using artificial intelligence. I believe artificial intelligence is the augmentation of human intelligence, with data, computation, domain knowledge, and intriguing research questions. My work focuses on for example accurate quantification of biomarkers from images and disentangling intrinsic relationships within data.

## My main research interests

Biomedical image analysis | Machine learning |  
High-dimensional data visualization

## I am looking for

Imaging scientists | Biologists

## My expertise and technologies to offer

Biomarker quantification | Data exploration by visualization

# Sebastian Weingärtner

MRI physicist looking for exciting imaging applications of functional and cellular properties.



## Imaging Physics

Magnetic Resonance Systems (Mars) Lab

[s.weingartner@tudelft.nl](mailto:s.weingartner@tudelft.nl)

TNW

## About my work

We develop novel methods in Magnetic Resonance Imaging physics to depict previously undetectable properties on the micro-, meso- and macroscopic scale in-vivo. This spans work on signal modelling, quantitative imaging biomarkers, as well as novel imaging techniques for functional brain imaging. Most of our experiments are done on clinical MRI machines at field strengths 1.5T – 7T, enabling the direct application to human subject.

## My main research interests

Magnetic Resonance Imaging | Functional neuroimaging | Imaging of cellular properties in-vivo

## I am looking for

Neuroimaging | Tissue/animal models

## My expertise and technologies to offer

Magnetic Resonance Imaging | In-vivo imaging | Functional neuroimaging



# Antonia Denkova

Radiochemist and soft matter engineer looking for imaging in vitro, bioassay development and microfluidics.



**Radiation Science & Technology**  
Applied Radiation and Isotopes  
[a.g.denkova@tudelft.nl](mailto:a.g.denkova@tudelft.nl)

TNW

## About my work

My research focuses on the development of radionuclide therapy for cancer treatment aiming at decreasing collateral damage while maximizing tumor damage. The research consists of determining the best radioisotope depending on the tumor characteristics, optimizing the production of these radioisotopes, developing methods to bring these radioisotopes to the targeted area and final evaluation in vitro and in vivo.

## My main research interests

Radiation effects on cells | Development of delivery systems for radioisotopes | Neutron activation of different compounds including chemotherapeutics

## I am looking for

Imaging in vitro | Bioassay development | Microfluidics

## My expertise and technologies to offer

Preparation of radiotracers for life science experiments | In vitro evaluation 2D and 3D | Soft matter nano-systems loaded with chemotherapeutics or radionuclides

# Marlies Goorden

Imaging physicist looking for biological and biomedical applications for radionuclide and CT imaging.



**Radiation Science & Technology**  
Biomedical Imaging  
[m.c.goorden@tudelft.nl](mailto:m.c.goorden@tudelft.nl)

TNW

## About my work

I am a physicist working on the development of new technologies and image reconstruction algorithms to improve radionuclide imaging (SPECT-PET). Together with industrial partners and academic medical centers I have developed high-resolution tomography for small experimental animals with unprecedented resolutions that can image radioisotopes with a very broad range of energies and in different combinations (multi-isotope imaging). My expertise mainly lies in theoretical analysis of scanner geometries, optimization through simulations and development of new image reconstruction algorithms.

## My main research interests

Radionuclide imaging | Image reconstruction | Scanner optimization

## I am looking for

Biological and biomedical applications for radionuclide and CT imaging

## My expertise and technologies to offer

Small animal SPECT | Small animal PET | MicroCT

# Robin de Kruijff

Radiochemist and (radio)tracer expert looking for bio-applications for mineral tracer based metabolism studies and radiopharmaceutical development physicians.



**Radiation Science & Technology**  
Applied Radiation and Isotopes  
[R.M.deKruijff@tudelft.nl](mailto:R.M.deKruijff@tudelft.nl)

TNW

## About my work

In my work, I focus on the use of radionuclides for medical applications. This includes developing new production routes for radionuclides using our nuclear reactor, investigating their potential as radiopharmaceutical for cancer therapy, and using radionuclides to study the bioavailability and metabolism essential minerals. As such, I aim to (1) develop (radio)isotopes for disease diagnosis or treatment, (2) obtain a better understanding of human and animal metabolism, and (3) evaluate the uptake, distribution, intercompartmental kinetics and excretion of metals.

## My main research interests

Radionuclide productio | Microfluidics | (Radio)tracers

## I am looking for

Metalloproteomics experts | Nutritional researchers |  
Radiopharmaceutical development physicians

## My expertise and technologies to offer

Isotope separation technologies | Non-destructive isotopic analysis based on neutron activation | Radiotracer development

# Zoltán Perkó

Computational physicist looking for bioinformatics, radiobiology and in-vivo imaging.



**Radiation Science & Technology**  
Reactor Physics and Nuclear Materials  
[z.perko@tudelft.nl](mailto:z.perko@tudelft.nl)

TNW

## About my work

My research focuses on novel radio- and proton therapy treatment planning approaches for cancer treatment. These include handling uncertainties (arising from e.g. patient positioning and proton range errors, breathing and organ motion), quantifying treatment robustness, developing robust optimization methods, optimizing radiotherapy fractionation and combined modality treatments, building decision support tools and exploring biology based treatment planning.

## My main research interests

Biology based radiotherapy treatment planning | Robust/probabilistic proton therapy treatment planning | Uncertainty quantification method development

## I am looking for

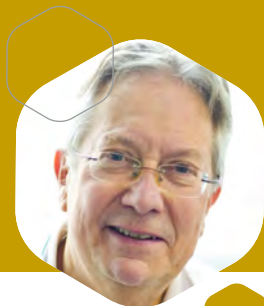
Bioinformatics | Radiobiology | In-vivo imaging

## My expertise and technologies to offer

Treatment optimization | Numerical modelling | Sensitivity and uncertainty analysis

# Albert van de Wiel

Senior consultant in internal medicine and isotope research looking for opportunities to collaborate.



**Radiation Science & Technology**  
Applied Radiation and Isotopes  
[a.vandewiel@tudelft.nl](mailto:a.vandewiel@tudelft.nl)

TNW

## About my work

Our work concerns the application of both stable and radioactive isotopes in clinical medicine. I focus on stable isotopes, my colleague Antonia Denkova on radioactive isotopes.

## My main research interests

Multi-element analysis in human material | Application of enriched stable isotopes in clinical research | Radionuclides in diagnostic procedures

## I am looking for

Opportunities for collaboration

## My expertise and technologies to offer

INAA | Radiochemistry | Contacting clinical researchers

# A-Z BEI PI index

<b>BEI PI</b>	<b>page</b>
Abeel, Thomas	56
Accardo, Angelo	23
Akyildiz, Ali	4
Aslan, Yanki	71
Aubin-Tam, Marie-Eve	83
Baaijens, Jasmijn	57
Bauer, Marianne	84
Bazyar, Hanieh	32
Bokinsky, Greg	85
Boukany, Pouyan	111
Boutry, Clementine	69
Breedveld, Paul	5
Breukelen, Boris van	45
Brinks, Daan	120
Buchner, Abel-John	33
Buijnsters, Ivan	24
Caneva, Sabina	25
Carroll, Elizabeth	121
Cazaux, Stéphanie	80
Cervone, Angelo	81
Costa, Tiago	62
Cremer, Jochen	55
Croon, Guido de	79
Cutz, Luis	34
Dauwels, Justin	63
Dekker, Cees	87
Dekker, Nynke	88
Denkova, Antonia	129
Depken, Martin	89
Dieudonné, Anne-Catherine	42
Djanashvili, Kristina	97
Dodou, Dimitra	6
Dubbeldam, Johan	52
Eelkema, Rienk	112
Eral, Burak	35
Fereidoonzehad, Behrooz	7

<b>BEI PI</b>	<b>page</b>
French, Paddy	64
Garbin, Valeria	113
Garcia, Santiago	80
Gebert, Julia	43
Geertsema, Hylkje	122
Gijsen, Frank	8
Ghatkesar, Murali	26
Ghodrat , Sepideh	72
Gonçalves, Joana	58
Goorden, Marlies	130
Grußmayer, Kristin	90
Hagedoorn, Peter-Leon	98
Hanefeld, Ulf	135
Halem, Doris van	46
Haringa, Cees	110
Hendriks, Richard	70
Hollmann, Frank	100
Hosseini, Hassan	28
Hunt, Andres	27
Hunyadi, Borbála	65
Idema, Timon	91
Iskander-Rizk, Sophinese	29
Jafarian, Matin	16
Jakobi, Arjen	92
Jong, Wiebren de	36
Jonkers, Henk	44
Joo, Chirlmin	93
Jourdin, Ludovic	101
Jovanova, Jovana	20
Kalkman, Jeroen	123
Karana, Elvin	73
Kiss, Tony	106
Klijin, Marieke	102
Koenderink, Gijsje	94
Kortlever, Ruud	37

<b>BEI PI</b>	<b>page</b>
Kreuk, Merle de	47
Kruijff, Robin de	131
Kuilen, Jan-Willem van de	40
Kumar, Sid	22
Kumru, Baris	77
Laan, Liedewij	95
Laureni, Michele	48
Lier, Jules van	49
Lindeboom, Ralph	50
Loosdrecht, Mark van	103
Mans, Robert	104
Manzaneque, Tomás	66
Maresca, David	124
Martins, Joana	74
Masania, Kunal	78
Mastrangeli, Massimo	67
McMillan, Duncan	107
McQuillan, Holly	75
Meijer, Dimphna	96
Mendes, Eduardo	114
Menzel, Miriam	125
Mirzaali, Mohammed J.	9
Mosleh, Yasmine	41
Muratore, Dante	68
Pabst, Martin	108
Paul, Caroline	109
Peirlinck, Mathias	10
Perko, Zoltan	132
Picken, Stephen	115
Pirola, Selene	11
Plas, Raf van de	17
Portela, Luis	116
Reinders, Marcel	59
Rens, Lisanne	53
Rwei, Alina	117
Sakes, Aimée	12



<b>BEI PI</b>	<b>page</b>
Santina, Cosimo Della	14
Schweidtmann, Artur	118
Smith, Carlas	18
Somoza-Tornos, Ana	119
Stallinga, Sjoerd	126
Staňková, Kateřina	82
Staufer, Urs	30
Tam, Daniel	38
Tao, Qian	127
Tatenhove-Pel, Rinke van	105
Tighe, Brian	39
Tömen, Nergis	60
Veldhuis, Marie-Claire ten	51
Verbiest, Gerard	31
Verhaegen, Michel	19
Weber, Jana	137
Weingärtner, Sebastian	128
Weymouth Gabe	21
Wiel, Albert van de	133
Yoldas, Havva	137
Zadpoor, Amir	15
Zhou, Jie	13



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Nienke van Bommel

**Graphic design**

Judy Ballast

**Contact**

[N.vanBommel@tudelft.nl](mailto:N.vanBommel@tudelft.nl)