

# Research Interests of ESP Associates Engineering Science Programme National University of Singapore

## Computational Engineering Science

**Prof Wang Chien Ming** (whose Host Department is Civil and Environmental Engineering,  
E-mail: ceewcm@nus.edu.sg)

- Very Large Floating Structures
- Structural Stability and Vibration
- Nanostructures

**A/Prof Joshi Shailendra** (whose Host Department is Mechanical Engineering,  
E-mail: shailendra@nus.edu.sg)

- Computational and Experimental Mechanics
- Material Instabilities and Failure Processes;
- Nano/Non-crystalline Materials.

**Dr Koh Soo Jin Adrian** (whose Host Department is Mechanical Engineering,  
E-mail: mpeksja@nus.edu.sg)

- Energy Harvesting
- Electro-Active Polymers
- Applied Theoretical Mechanics

**Dr Shen Lei** (Engineering Science Programme, E-mail: espshenl@nus.edu.sg)

- Computational Material/Device Physics
- Electronic and Transport Property
- Advanced Materials Design

## Energy Systems

**Dr Chua Kian Jon Ernest** (whose Host Department is Mechanical Engineering,

E-mail: [mpeckje@nus.edu.sg](mailto:mpeckje@nus.edu.sg))

- Biothermal Heat Transfer
- Energy-efficient HVAC (Heating Ventilation Air-Conditioning)
- Building Energy System Management
- Combustion/Microcombustion Thermal Photovoltaic

**A/Prof Palani Balaya** (whose Host Department is Mechanical Engineering,

E-mail: [mpepb@nus.edu.sg](mailto:mpepb@nus.edu.sg))

- Nano-ionics
- Lithium-ion and Sodium-ion Batteries
- Nanostructured Solar Cells

**Dr Erik Birgersson** (whose Host Department is Chemical and Biomolecular Engineering,

E-mail: [espbke@nus.edu.sg](mailto:espbke@nus.edu.sg))

- Transport Phenomena
- Mathematical Modelling
- Energy Systems (fuel cells, organic solar cells, batteries, flow batteries)

**Dr Md Raisul Islam** (Engineering Science Programme, E-mail: [espmri@nus.edu.sg](mailto:espmri@nus.edu.sg))

- Vapour Absorption Cooling Systems
- Energy Efficient Air Conditioning Systems
- Bio-thermal Systems
- Multi-mode Drying Systems
- Heat and Mass Transfer

## Nanoscience and Nanotechnology

**A/Prof Jeroen van Kan** (whose Host Department is Physics, E-mail: [phyjavk@nus.edu.sg](mailto:phyjavk@nus.edu.sg))

- 3D Nanofabrication using Proton Beams
- Nanofluidics Lab On Chip Fabrication for Single Molecule Detection and Manipulation
- High Throughput Fabrication of Micro and Nano Structures
- Ion Source Development for Advanced Ion Implantation and Nanolithography

**A/Prof Ho Ghim Wei** (whose Host Department is Electrical and Computer Engineering, E-mail: [esphgw@nus.edu.sg](mailto:esphgw@nus.edu.sg))

- Nanomaterials (synthesis, self-assembly and fabrication of nanodevices)
- Nanostructured Materials Photovoltaic
- Photocatalyst

**A/Prof Zhang Chun** (whose Host Departments are Physics and Chemistry, E-mail: [phyzc@nus.edu.sg](mailto:phyzc@nus.edu.sg))

- Molecular Electronics/spintronics
- Nanoscale Catalysis
- Strongly Correlated Nanoscale Systems

## Photonics and Optics

**A/Prof Anjam Khursheed** (whose Host Department is Electrical and Computer Engineering, E-mail: [eleka@nus.edu.sg](mailto:eleka@nus.edu.sg))

- Electron/ion Focused Beam Columns for Electron/Ion Beam Microscopy
- Novel Types Electron/Ion Sources
- Electron/Ion Energy/Mass Spectrometers

**A/Prof Andrew Bettiol** (whose Host Department is Physics, E-mail: [a.bettiol@nus.edu.sg](mailto:a.bettiol@nus.edu.sg))

- Plasmonics and metamaterials
- Integrated Optics
- Super-resolution Nuclear Microscopy and Radiobiology

**Dr Daniel S. Pickard** (whose Host Department is Electrical and Computer Engineering, E-mail: [dan.pickard@gmail.com](mailto:dan.pickard@gmail.com))

- Nanofabrication
- Plasmonics
- Advanced Imaging Technologies