Advanced Production Engineering

Information for IEM master students

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university of groningen

Adv. Production Eng. (APE) research group

Prof. dr. Yutao Pei
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Nanoporous materials for energy storage;

Laser materials processing (3D printing, ablation, welding, cladding);

Thin films & coatings;

in situ microscopy

Prof. dr. Jan Post
j.post@philips.com

Strategic Dept. **Philips Consumer Style**

Digital fabrication;

Sheet forming;

Modeling

Smart factory

Dr. Antonis Vakis
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Mechanical Eng.;
Tribology;
Ocean energy harvest;
Region of Smart Factory

Dr. Ajay Kottapalli
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Piezotronics;
Nano-energy devices;
Self-powered sensors

2 Technical staff

5 Post-doc researchers

11 PhD students

15 Master students per year

20 Bachelor students per year

APE: research areas & thrust

Main research areas:

1. Materials for sustainable energy
2. Piezotronics, sensors, nanofabrication
3. Laser materials processing
4. Thin films and coatings
5. Modeling contact and tribology
6. Energy harvest: Ocean Grazer

Thrust:

Unique combination of advanced processes and materials for the next generation products.

What can you achieve?
New design, New process;
New materials and product;
Patent, Papers;
Work experience with industry

M2i materials innovation institute   TNO   PHILIPS   qsil   Resato

nlr Dedicated to innovation in aerospace   ICD Drachten   DUCOM MATERIAL CHARACTERIZATION SYSTEMS   Hauzer || Techno Coating

SKF   DAF DAF Trucks N.V.   BOSCH Invented for life   TATA STEEL

Research projects

1. Nanoporous graphene for next generation Li-S batteries;
2. Novel insight into tribology of carbon black soot particles in engine oils;
3. Antibacterial hydroxyapatite coatings for medical applications;
4. Physical vapor deposited ZnMg-coatings for next generation steels;
5. 3D laser printing of stainless steel conformal cooling molds;
6. Properties of 3D printed Glass and Quartz

7. Biomimetic Nanosensors Inspired by Inner Ear Cilia
8. Self-Powered Nanofiber Sensors for Sensing in Biomedical Applications
9. Porous Graphene-Polymer Spongy Sensors

10. Modelling of thermally reversible interactions in polymeric systems;
11. Thin film lubrication modeling;
12. Smart Factories: Bonding strength of deforming metal-polymer interfaces;
13. Dynamical modeling and control design of the Ocean Grazer's floater blanket