NANOSCIENCE AND NANOTECHNOLOGY

A CHALMERS AREA OF ADVANCE
AoA Nanoscience and Nanotechnology

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<th>NANO FOR KNOWLEDGE</th>
<th>NANO FOR HEALTH</th>
<th>NANO FOR ENERGY</th>
<th>NANO FOR ICT</th>
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<td>Major new discoveries and inventions are often the results of curiosity driven research where the only goal is to increase our understanding. We perform basic research in several areas, ranging from quantum devices to biomolecules.</td>
<td>In increasing sensitivity and resolution of new analytical methods we pave the way for discoveries in pharma industry and in the health sector. We also bring fundamental molecular understanding and design as well as materials knowledge in life sciences.</td>
<td>Control of the nanoscale is inevitable for the systematic development of energy related materials and forms the basis for our approach to energy research.</td>
<td>Nano is already present in today’s ICT solutions in increased-density and high-speed driven development (cf. Moore’s law). Additionally, in Nano for ICT, new phenomena and functionalities - present only at the nanoscale - are investigated.</td>
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## AoA Nanoscience and Nanotechnology - profiles

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<th>ACTIVE FIELDS</th>
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### NANO FOR HEALTH
- Graphene-based sensors
- Analytical methods - pharma industry and health care
- Cellular uptake of drugs
- Tissue adapted functionalized implants
- Functional imaging of brain
- Understanding of targeting of DNA/RNA
- Stem cell interaction
- Nanoplasmonic biosensors

### NANO FOR ENERGY
- Graphene for Li ion batteries and DC cables
- Nanostructured material fuel cells
- Photocatalysis
- Polymer films/nano-particles for solar cells
- Energy/electron transfer processes - solar energy app.
- Solar energy storage
- Nanotechnology for catalysis

### NANO FOR ICT
- Graphene optoelectronics
- Graphene electronics for HF
t- THz instrumentation for astronomy/satellites
- Superconductivity
- Electronics for THz frequencies
- Semiconductor lasers for fiberoptics
- Ultra-low noise technology/amplification
AoA Nanoscience and Nanotechnology - centres

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