Prof. Lars Österlund

Uppsala University

Sweden

Education

1990	B. Sc. in physics at University of Sussex, U.K and Umeå University
1991	M.Sc. in physics at Umeå University, Master Thesis at Max-Planck Institute, Dortmund, Germany
1997	PhD in Physics, Chalmers University of Technology and Göteborg University, "Elementary surface processes on graphite and aluminium", supervisor: Bengt Kasemo.
1997-1999	Postdoc at University of Aarhus, Denmark
2000	Postdoc at Competence Centre for Catalysis, Chalmers University of Technology, Göteborg.
2002	Docent in physics 2002, Chalmers University of Technology.

Professional Experience

2021	Chair Swedish Research Council (VR), Panel Materials Science and Engineering
2020-ff	Board member Dept. Materials Science and Engineering
2020-ff	Board member Uppsala University International Science Program
2020	Vice-chair Swedish Research Council (VR), Panel Materials Science)
2020	Co-founder Nanoform Science AB (ww.nanoformscience.se)
2018-ff	Board member TCMnet (International Network for Transparent Conducting Materials)
2010-ff	Professor in solid state physics and
2006-2009	Research director, Swedish Defence Research Agency
2003-2006	Dep. Research director FOI – The Swedish Defense Research Agency
2000-2002	Assistant Professor, Dep Applied Physics, Chalmers University of Technology
1999	Assistant Research professor, Institut før Fysik og Astronomi and Center of Atomic-Scale Material Physics, University of Aarhus, Århus, Denmark

Research

Österlund's group current research focuses on catalytic nanomaterials, solar light responsive materials, such as photocatalytic, electrochromic, photochromic and thermochromic materials, self-cleaning surface coatings, and solid-state gas sensors with applications in building technology, air and water treatment, and medical technology. Recent internationally recognized research includes the invention of spectral selective multilayer photocatalytic and infrared and solar absorbing thermochromic coatings with enhanced reactivity, synthesis of facet oriented Titania thin films by means of magnetron sputtering, and a new method to modify acid-base properties of oxide surfaces based on photo-adsorption of electrophilic molecules from gas-phase, yielding superior oleophobic, self-cleaning properties and long-lasting catalytic properties with applications in hygienic coating technology. Employing advanced gas deposition methods Österlund's group has developed methods to fabricate nonporous thin films of pure and mixed metals and oxide nanoparticles, as well as metal – organic ligand assemblies for electronic sensors for exhaled breath analysis. Recently, the group has a research focus on photon and electron-stimulated surface reactions on oxides, bifunctional and heterojunction catalysts to physically separate charge carriers and redox reactions, and inorganic photochromism in lanthanide oxyhydrides. The group has dedicated instruments for making nonporous coatings by PVD techniques (sputtering, inert gas-phase deposition), angle-resolved UHV based IRRAS, in situ and operando FTIR setups (transmission, reflection, DRIFT) and micro-Raman, photoluminescence, an almost complete spectrophotometric lab, optical modelling software, and several dedicated gas and liquid rectors for catalysis and adsorption studies.