

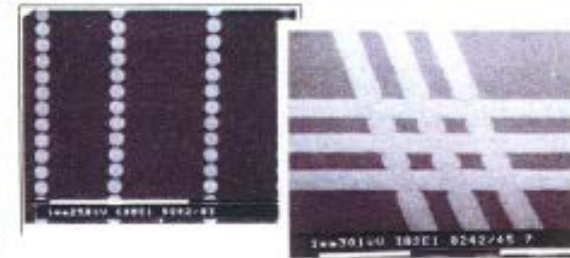
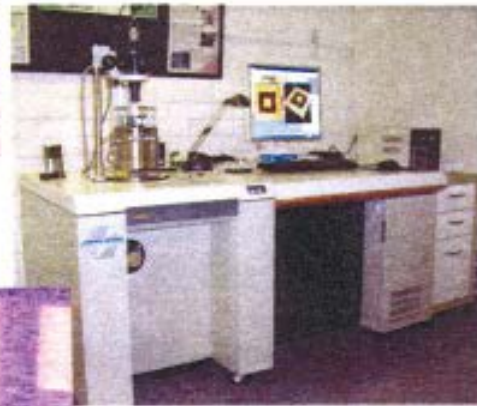
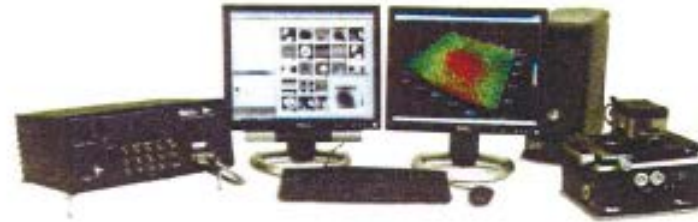


ICAM

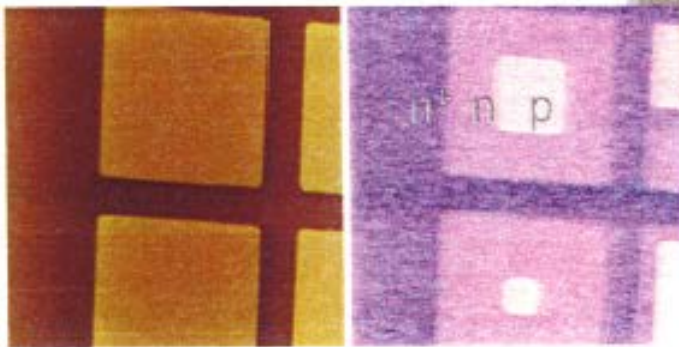
International Centre for Advanced Materials

ICAM

International Centre for Advanced Materials



Inkjet printed and sintered ZrO_2 dots and lines



Contact persons:

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ICAM

International Centre for Advanced Materials

A new Center of Excellence, ICAM (International Centre for Advanced Materials) is dedicated to academic and industrially relevant research on advanced materials. A combination of Theory, Experiment, Product development, and strong interaction with Venture Business enterprises is envisaged. The centre provides opportunities for International visiting researchers and graduate students on a short term basis. *Unlike other Centres ours is customer driven and maintained mostly from grants directly obtained by those using our facilities.*

LOCATION AND PERSONNEL:

The Centre of Excellence ICAM is affiliated to KTH, and located in the Dept. of Materials science, at Brinellvägen 23. All direct appointments (post docs, visiting researchers) in the ICAM itself will be on contract basis for **short** (months), or **longer** (years) period based on external funding. Strong Industrial interactions are crucial and actively pursued. **International participations will be solicited from EU, US, Japan and other Countries.**

Contact Persons: [Börje Johansson Borje@mse.kth.se](mailto:borje@mse.kth.se), [Lyubov Belova, Belova@mse.kth.se](mailto:Belova@mse.kth.se); [K.V.Rao, rao@kth.se](mailto:rao@kth.se).



NATIONAL PARTNERS

National Supercomputer Center, Linköping
Karolinska Institute, Stockholm
Stockholms University
Uppsala University
Linköping University

INDUSTRIAL AFFILIATES:

FEI (Netherlands/USA)
Xaar Jet AB (Järfälla, Sweden)
Toyota Motors (Japan/Belgium)
Asylum Research (USA)
Spintronix AB (Sweden)
Fiber Optics Valley (Hudiksvall, Sweden)
Spectral Solutions (Sweden)
Philip Morris (USA)

INTERNATIONAL AFFILIATES:

Berkeley Microscopy Laboratories, USA
Portland State University – Oregon, USA
Nat'l Microscopy Centre-Arizona State Univ. USA
Inst. of Mater. Research, Tohoku Univ., Japan
MIT, Cambridge, USA; Sheffield Univ., UK
Laserzentrum Hannover, Germany
Bhavnagar University, and BARC, India

INFRASTRUCTURE:

Visiting Professors
Short and Long term exchange visitors
Post Doctoral Fellows
Short Term Mission Researchers
Summer Researchers -3 month projects
Graduate Students



AREAS OF RESEARCH (Current funded at a level of 15 mKR/yr from Agencies, Foundations, Industries, KTH, Dept of Materials Science etc...)

Spintronics (*with Spintronix*)

Molecular Electronics, Fullerene Electronics

Transparent flexible Electronics and their applications

3D Tomography and Cryotomography, FIB/EB nano-prototyping

Advanced Biocompatible Materials (*with colleagues at KI, SU and in India*)

Ink-jet Technology (*with Xaar Jet*) - *And its advanced materials applications*

Electrotextiles, Medical textiles..

Nanostructured Steels, Bulk Glassy Materials (*Hero-M program*)

CURRENT RESEARCH LEADERS:

Prof. K.V.Rao	(Experimental Studies-spintronics)
Docent Lyubov Belova	(Experimental, Nano/bio technology, VR Rådsforskare, INGVAR Awardee)
Mr. Wolfgang Voit	(Xaar Jet AB –inkjet technology)
Prof. R.V.Upadhyay	(Magnetic Nanoparticles)
Docent Valter Ström	(Bulk glassy materials - experimental..)
Börje Johansson	(Theory)
Dr. Rajeev Ahuja	(Theory –VR Rådsforskare)
Docent Anna Delin	(Theory –VR Forskarassistent)
Docent Pavel Korzhavy,	(Theory- <i>Forskare</i>)
+ a few more under discussions	



ICAM Centre Operations (an OUT REACH PROGRAM)

Nanotechnology

Targeted Drug Delivery
Novel Instrumentation, Sensors
Patterned Structures. Sensors
Chemical Synthesis of Nanoparticles
Biocompatible media,
3D tomography + EBSD, Cryotomography
Functional imaging, SPM technology

Processing Technologies

Pulsed Laser Deposition
Rf & DC Sputtering
Lithography and Circuit Design
Ink-jet Technology
Rapid Solidification – Bulk Glassy Materials.

Bio-related Topics

Targeted Drug Delivery, bio-inorganic interfaces
Ink-jet patterning of proteins and cells
FIB Cryotomography, 3D reconstruction
Morphology and visco-elastic properties of living cells

Advanced Electronics:

New forms of Carbon- fullerenes, diamond
Patterned Structures using Nanotubes,
Nanowires

Materials for Spintronics

High frequency shielding nanocomposites
Transparent Electronics
Polymer/metal composites

Advanced Steels

Rapidly Solidified Materials
Amorphous Steel
Fullerene/Nanotube reinforced Steels

Pedagogy

e-courses; Summer Research programs;
Computational methods for Gymnasiums
Materials Sciences, Technology, market study
Intensive courses for teachers, researchers
Courses in Advanced experimental techniques



Major Experimental Facilities at Tmfy-MSE

Scanning Probe Microscopy:

-Scanning Tunnelling Microscopy, STM/STS, Atomic Force Microscopy, AFM, Magnetic Force Microscopy, Kelvin Probe, Low/High temperatures, vacuum/controlled atmosphere characterization. Fluid Cells, dynamic studies under controlled fluid/gas conditions, mechanical and viscoelastic characterization.

Dual Beam UHR field-emission SEM/FIB system with analytical capabilities.

- State-of-the-art nanoscale device prototyping, patterning and characterization.
- Cryogenic capabilities for soft materials, biological and fluid specimen
- 3D tomography with analytical capabilities (e.g. EBSD, EDS).

Thin Film Deposition Systems: -Laser Ablation - (Nd:YAG, 355nm at 3f) –DC and RF Magnetron Sputtering

Magneto-optic Faraday and Kerr Rotation Systems

Closed Cycle ARS Multi-system : (10K-800K operation)

-A versatile system with facilities to measure all transport, galvanomagnetic, and magnetic properties with a cold finger (or a hot one) to operate in the range of 10K to 800K.

Micro Miniature Measurement System

-a closed cycle measurement system specialty for Resistivity, and galvanomagnetic property measurements like Hall effect, etc.

Melt-Spinner: -Rapid Solidification in controlled atmosphere

Magnetometry:

-SQUID, VSM, ac-Susceptometer, 4-1000 K range, portable desktop ac susceptometer, local ac-susceptibility mapping (micron scale)

Thermal Characterization System: - (DSC. Thermogravimetry..)

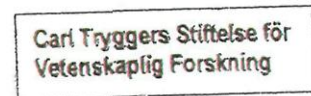
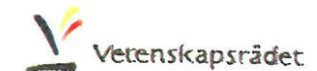
Electronic Property Measurement System by double ac technique:

-Hall Effect, (4K-1000K) -Magnetoresistance, (upto 5.5 Tesla range) -Electrical Resistivity (4K to 1000 K) -See-beck coefficient (100K to 320K)

Thermal Processing: - (Rapid Thermal Annealing, etc..)

Material Processing facilities: - Arc-melter, - mechanical alloying agitator, - annealing furnaces, etc.

Knut och Alice
Wallenbergs
Stiftelse





Albert Fert (NL)

Putting
SPIN
into Electronics

2007 Nobel Laureate Albert Fert inaugurates
**CENTER OF EXCELLENCE
FOR SPINTRONICS**



Albert Fert (NL), Docent L. Belova,
and Per Eriksson (General director, VINNOVA)



Peter Gudmundsson, president, KTH



Per Eriksson (General director, VINNOVA)