

Welcome to QualityNano Transnational Access (TA)

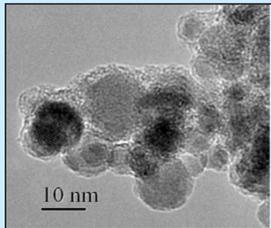
Fully funded access to equipment & technical expertise at 15
nano-characterization laboratories in Europe

Karlsruhe Institute of Technology (KIT)



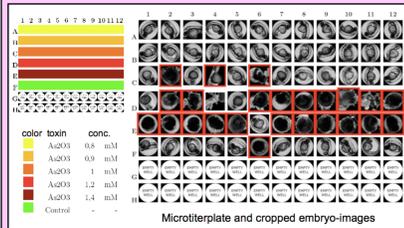
QualityNano Transnational Access is organized in 4 categories A, B, C, D: KIT offers instrumentation in all Categories apart from Category B.

Category A: Nanomaterial Synthesis

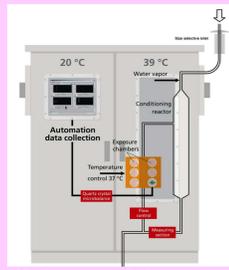


KMPP
Ceramic core/shell
nanoparticle (Core
 ZrO_2 , shell Fe_2O_3)

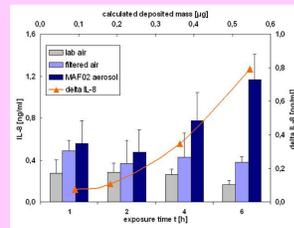
Category D: Nanomaterial Exposure Assessment



High-content high-throughput microscopy:
Zebrafish toxicity assays (e.g. auto-
mated coagulation assay)



Scheme of the Karlsruhe Exposure System
with the size selective inlet, the conditioning reactor for a constant aerosol and the VITROCELL® exposure chambers



The increase of the protein Interleukin-8 (IL-8) after exposure to fly ash from a municipal waste incinerator. IL-8 is a marker for inflammation in the cell culture

About QualityNano

QualityNano is an analytical research infrastructure whose purpose is to drive high quality research and testing practices for assessment of the potential risks posed by nanomaterials.

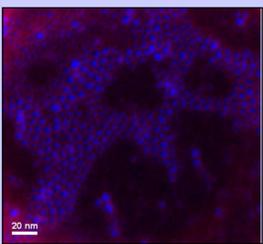
QualityNano will provide Users with access to 15 major European facilities for nanomaterials processing, characterisation and exposure assessment to support their ongoing research in these areas.

Access is via a single application and evaluation process. QualityNano is able to meet the Users' costs for:

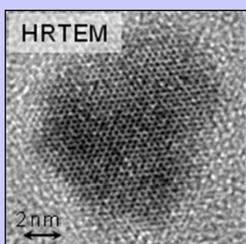
- Research (bench fees and consumables)
- International travel
- Local accommodation while based at the TAF
- A per diem to contribute towards living costs.

Note: TA results must be made publically available via publication / patent / PhD thesis etc.

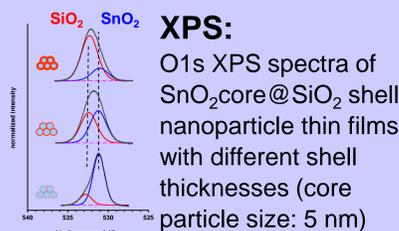
Category C: Nanomaterial Characterisation in situ/ex situ



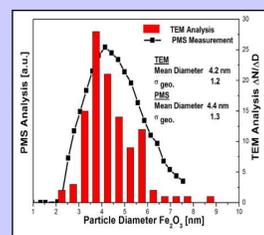
EFTEM:
Combined carbon (red) and silicon (blue) elemental maps showing the core-shell structure of $ncSi-C_{18}H_{37}$ nanoparticles



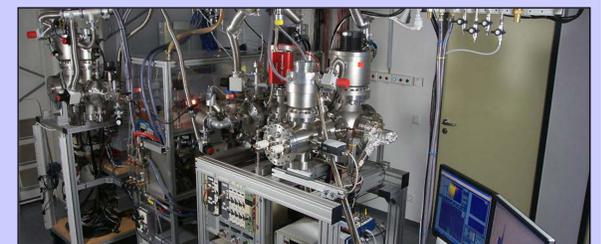
HRTEM
image of an individual ZnO particle with about 10 nm size



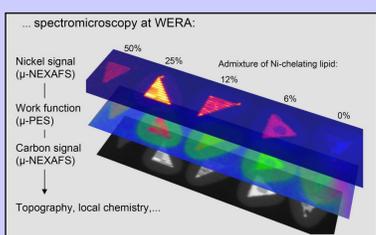
XPS:
 $O1s$ XPS spectra of SnO_2 core@ SiO_2 shell nanoparticle thin films with different shell thicknesses (core particle size: 5 nm)



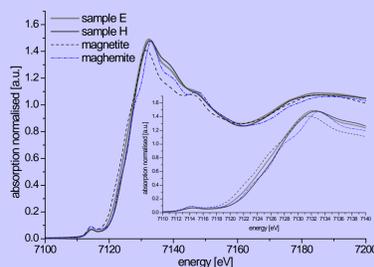
Particle mass spectrometer (PMS):
Size distribution of iron oxide particles generated by microwave plasma synthesis



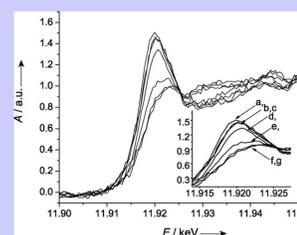
TRAPS
Mass characterization of airborne nanoaerosol



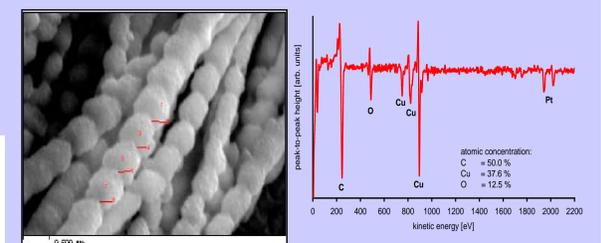
ANKA / BL WERA:
Spectromicroscopy of biorelevant micro-patterns (phospholipids) written by dip-pen nanolithography, the written triangles are 10 μm wide. The increasing admixture of the nickel-chelating lipids to the phospholipid carrier appears as the increasingly red-yellow colors.



ANKA / BL SUL-X:
 $Fe K$ XANES spectroscopy to characterize new magnetic bioactive materials replacing magnetic iron oxide nanoparticles in anticancer therapies. From the differences in the spectra to magnetite (Fe_3O_4) and maghemite ($\gamma-Fe_2O_3$) it is supposed that Fe enters the hydroxyapatite ($Ca_5(PO_4)_3OH$) structure and does not segregate into Fe-oxide nano-clusters.



ANKA / BL XAS:
Reduction of Gold to metallic state in the oxidation of dibenzylamine with $Au(OAc)_3/CeO_2$.



Auger Electron Spectroscopy (AES)
SEM image of Cu nanowire and AES point analysis

C	73 %	Ca	0,03 %
O	9 %	Fe	0,02 %
N	0,7 %	Ti	0,02 %
Mo	6,1 %	W	0,01 %
Co	1,6 %	Al	0,004 %
B	0,6 %	Cr	0,003 %
Mg	0,09 %	Cu	0,003 %

ICP-OES, CGHE, CS

Bulk and Surface Analysis:
Analysis of Carbon nanotubes

Contact at KIT (TA-Leader):

Dr.-Ing. S. Ray
c/o Karlsruhe Institute of Technology/CN
PL NANOMIKRO, Geb. 440
Hermann-von-Helmholtz-Platz 1
76344 Eggenstein-Leopoldshafen
Germany
Fon: +49 (0)7247 82 6251
Email: sikha.ray@kit.edu

Proposal submission:

Access is granted via a unified application process via 6-monthly TA call, available on-line under: www.qualitynano.eu

Contact (User Office):

Centre for BioNano Interactions,
University College Dublin,
Belfield, Dublin 4.
IRELAND
Phone: 353 1 716 2459
Email: TA@qualitynano.eu



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QualityNano is funded by the European Commission
Grant Agreement No: INFRA-2010-262163