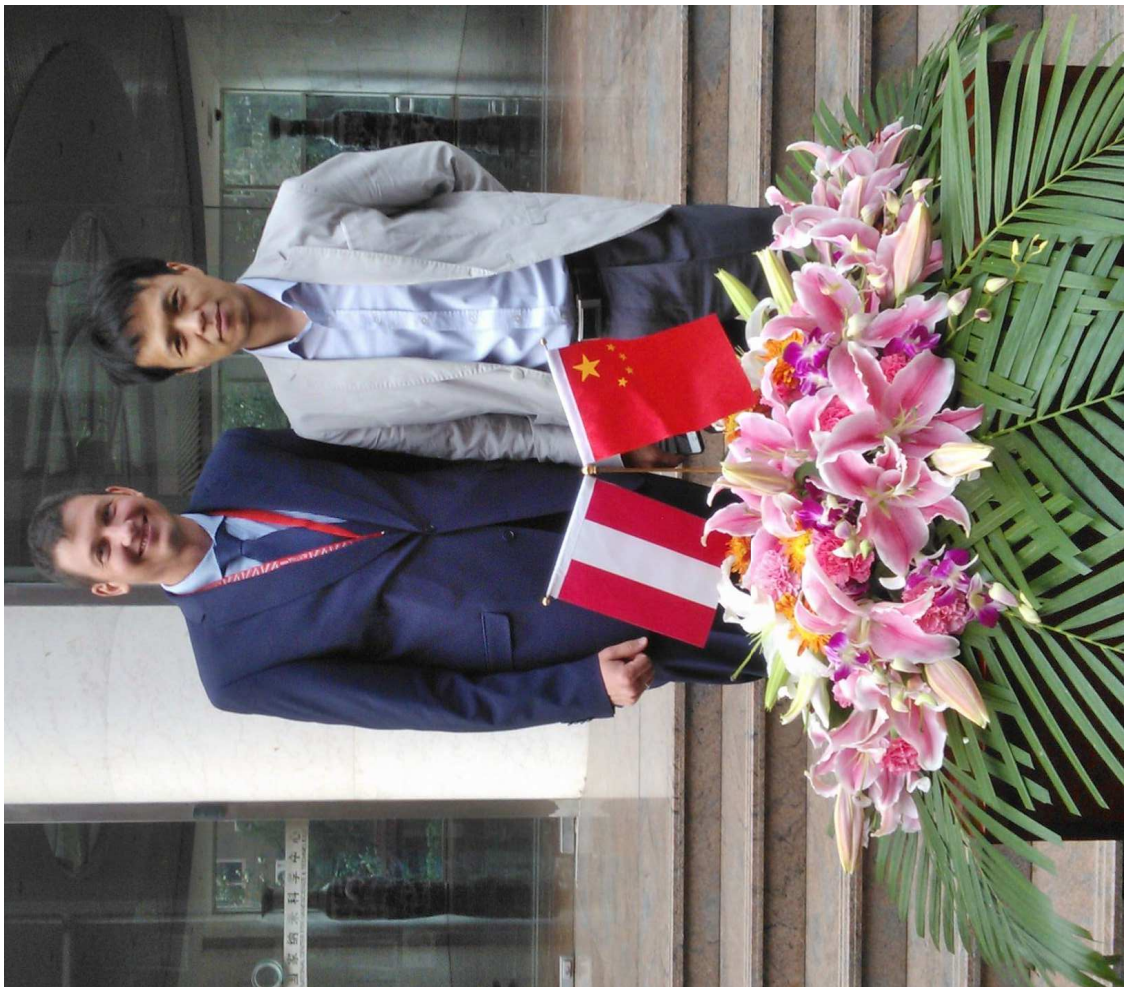


Nanobiotechnology and Nanomedicine

China – Austria Roundtable 2014

NIE Guangjun (NCNST)
GONG Jian Ru (NCNST)
FALK Andreas (BioNanoNet)



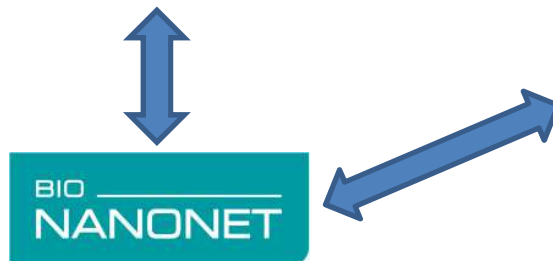
National and international cooperation

National

- NanoActionPlan-Implementation:
 - NIP (NanoInformationPortal)
 - NIK (NanoInformationsCommission)
- Clusterplattform Austria
- Nanonet-AT

International

- COST – MODENA
- COST – SGI
- COST – UPCONVERT
- HLG of Europ.Commission
- OECD – WPMN
- ETP-Nanomedicine
- NANOofutures
- NanoSafetyCluster
- EU-US-nanoEHS „Communities of Research“
- ECRN-Project Council



BioNanoNet – Nanomedicine

Austrian Nanomedicine Community:

- Novel Nano-Medical Solutions: Drug Targeting
- Nano-Oncology: Diagnostic, Drug Delivery and Therapy
- Nano-Pharmaceuticals
- Biomarkers
- Standardized Test Methods



Expertise - AT

Fabrication/Characterization of cellular structures

Human cell-barrier models

Inner Barrier Models

- Peripheral endothelial Cell Models
- Placenta Model
- Testicular Cell Model
- Blood-Brain Barrier Model

Outer Barrier Models

- Buccal Mucosa
- Gastro-Intestinal System
- Respiratory System
- *Ex vivo* Cell Models (skin, buccal mucosa, urothelial model, etc.)
- Retina

Expertise – CAS

facilities

- Imaging facilities: e.g. SPEC/CT, MRI, Fluorescence, etc.
- charac. and synthesis for NP's
- Synchrotron-based analytical techniques for NP's

models

- Tumor models (breast, pancreatic)
- Blood stream (endothelial cells, fibroblasts)
- Placenta
- BBB (animal)
- Exosome, Intracellular monitoring; membrane vesicles

Characterization

Nanomaterials characterization:

- Analysis of chemical composition
- Analytical TEM and AFM
 - To follow the path of nanoparticles within tissues or cells
- Electron tomography
 - Analysis of fine structure of specimens
- 3D detection:
 - Changes in the shape and location of macromolecules within tissues or cells

Project proposals

Bionanointeractions: barrier-models – Silica particles, gold-NP's

1st stage – safety evaluation/kick-off-start/ERA.NET

2nd stage – applications: for drug carriers, targeted delivery, imaging

Biomedical application: Tissue engineering - GQD as an efficient novel two-photon photoinitiator

- Synthesize and optimize the GQD
- Use GQD (initiator) for photopolymerisation to produce biocompatible, non-toxic polymer e.g. 3D-cellular structure for tissue engineering

Expertise – CAS (tissue engineering)

facilities

- Materials Synthesis: GQD
- Characterization (AFM, TEM, SEM,...)
- 3D-graphene materials, scaffold for tissue engineering
- Several additional work as shown in the slide of bionanointeractions

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Thank you for your attention

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