

Nanotechnology in Dresden and Possible Collaboration with IICN

J. Schreiber
Fraunhofer IZFP, Dresden

Fraunhofer IZFP-D
Maria-Reiche-Straße 2
D-01109 Dresden

+49 (0) 3 51/888 15-510
Juergen.Schreiber@izfp-d.fraunhofer.de
www.izfp-d.fraunhofer.de

Nano-Forum
Dubna, 1./2.07.2009

Fraunhofer-Gesellschaft

Leading Organization for Applied Research in Europe



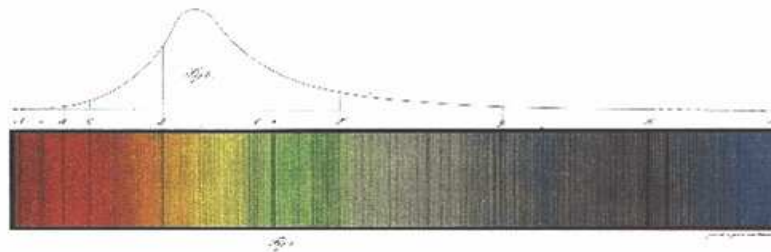
Joseph von Fraunhofer (1787 – 1826)



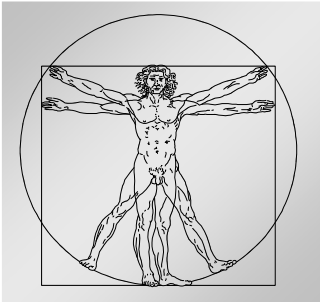
Researcher
discovery of “Fraunhofer Lines“
in the sun spectrum

Inventor
new methods of lens processing

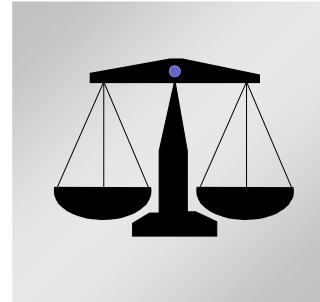
Entrepreneur
head of royal glass factory



Demands on a Fraunhofer Institute



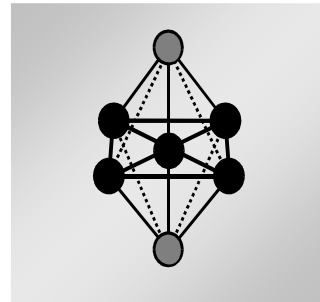
Scientific competence
proved by the
recognition of the
scientific community



**Well-balanced
financial mix**
of different
independent sources



**Market success and
entrepreneurial
competence**
proved by contracts with
industry and
government



**Professional
networking**
with other Fraunhofer
Institutes and externals

Fraunhofer-Gesellschaft in Nanotechnology

Examples of frontline theme

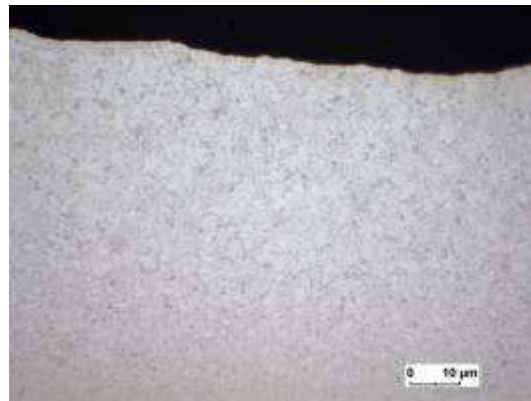
Bio-functional surfaces:
High tech with a sensitive skin



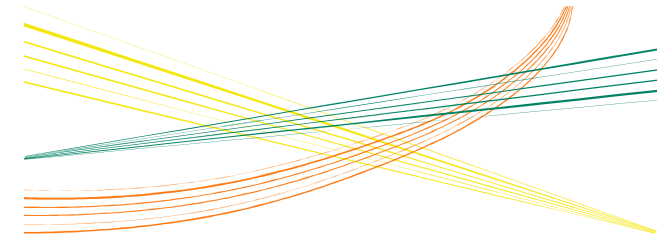
Nano-structured parts



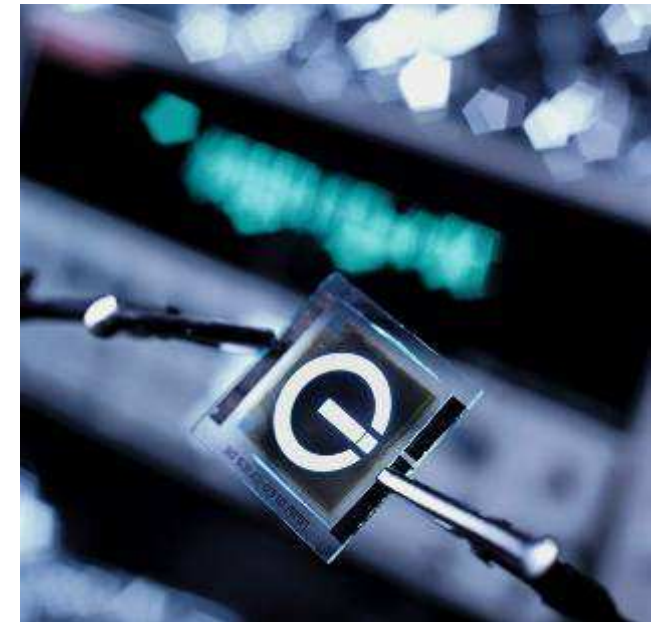
Conventional aluminum alloy.




Microcrystalline aluminum alloy .



Solid-state light sources:
Bright and efficient illumination



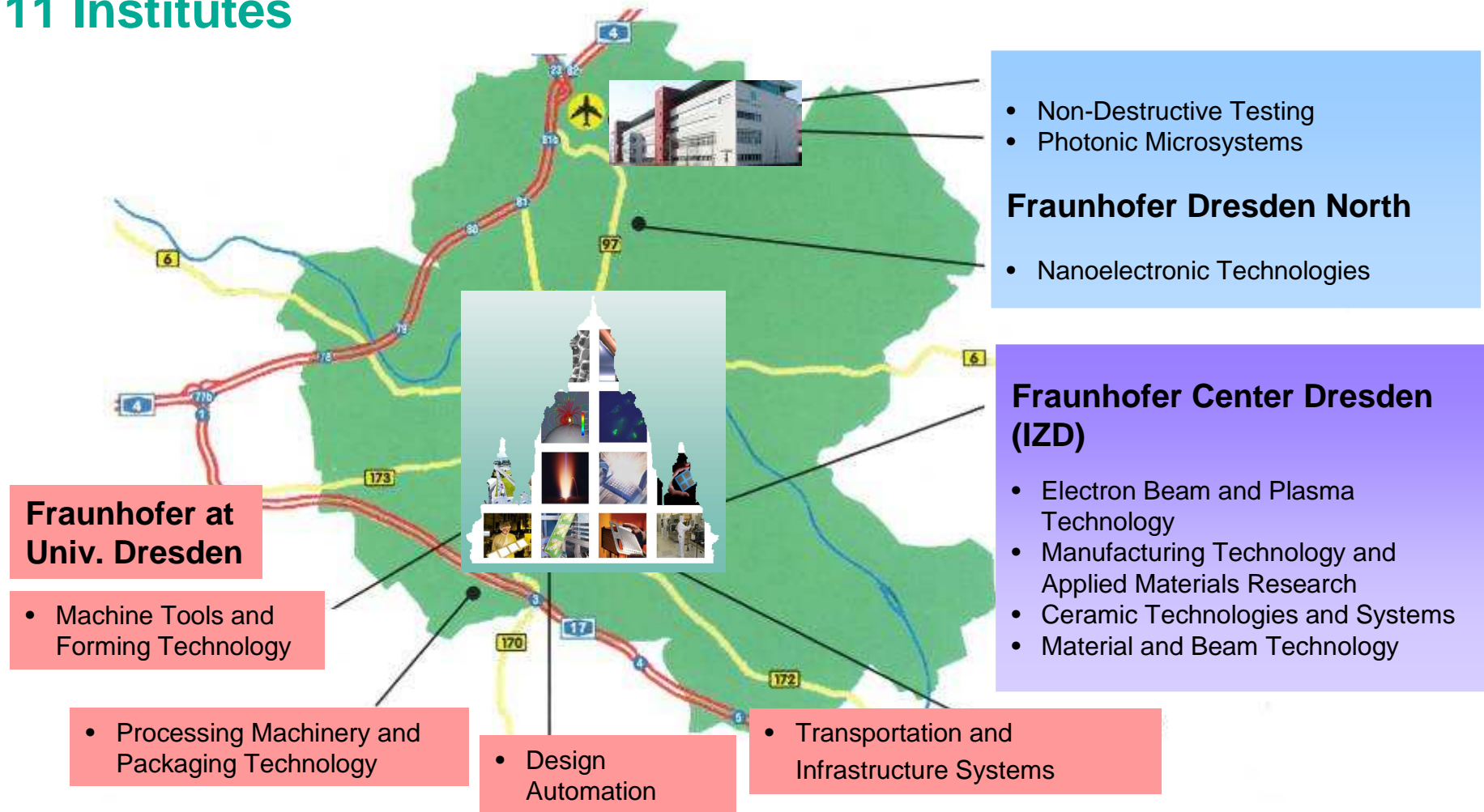


Fraunhofer Dresden

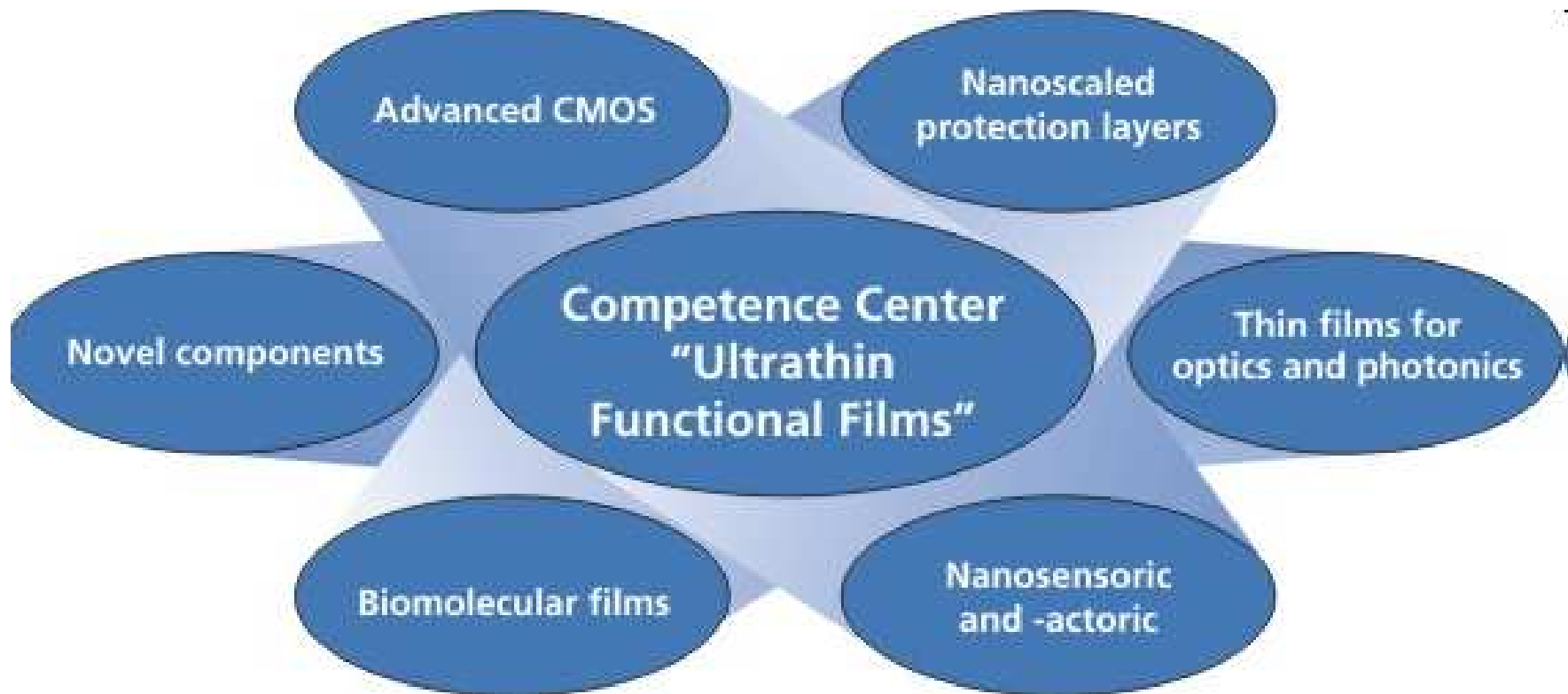


60 Jahre im Auftrag der Zukunft

Dresden – City of Fraunhofer 11 Institutes



The Center of Competence "Ultrathin Functional Films", distinguished by the Federal Ministry of Research (BMBF) as a nation-wide such, is coordinated by Fraunhofer-Institute IWS Dresden. It joins 51 enterprises, 10 university institutes, 22 research institutes, and 5 corporations into a common network



nanotechnology

CC "Ultrathin Functional Films"

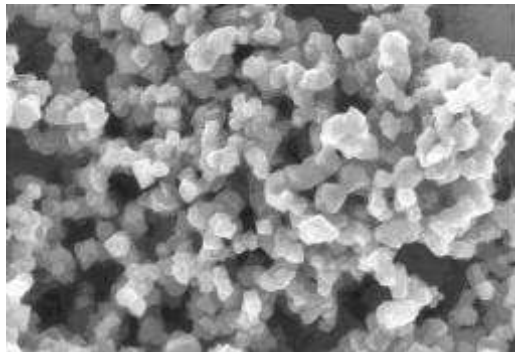
Nano-Forum

Dubna, 1./2. July 2009

Accredited joint laboratories

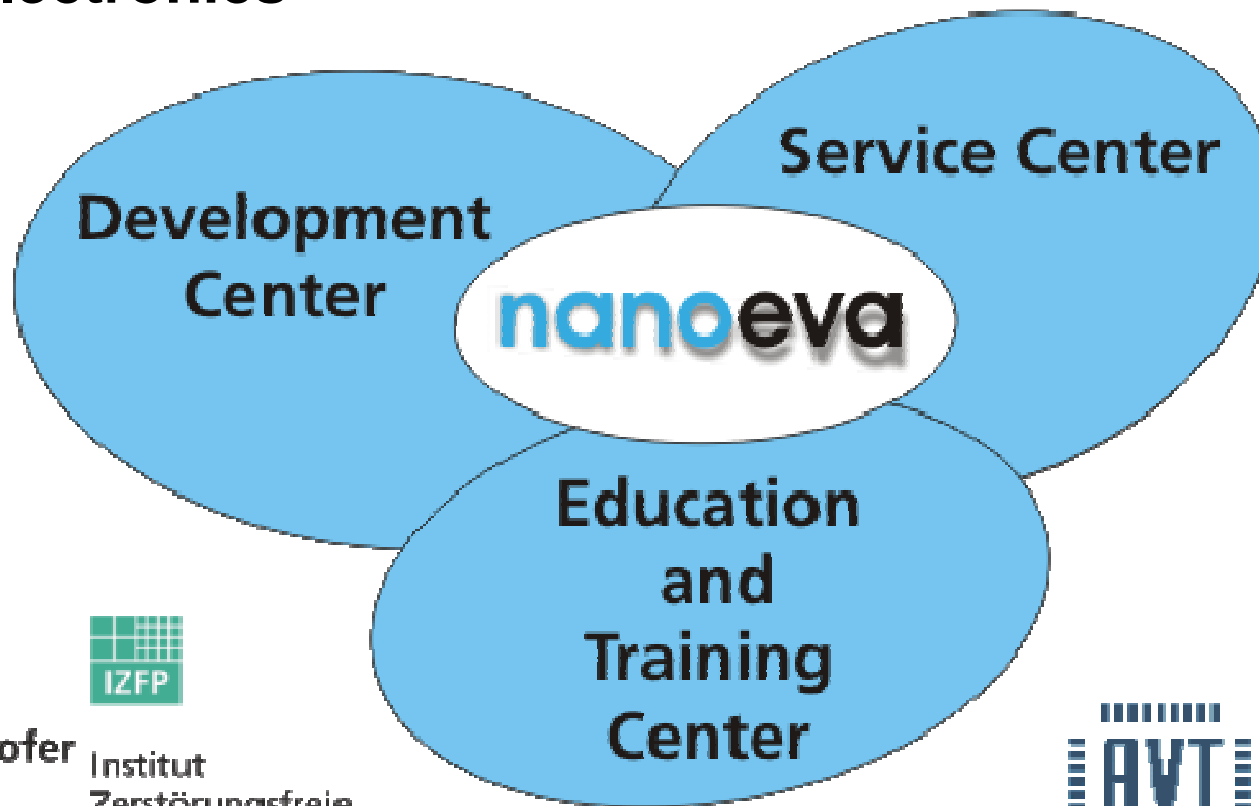
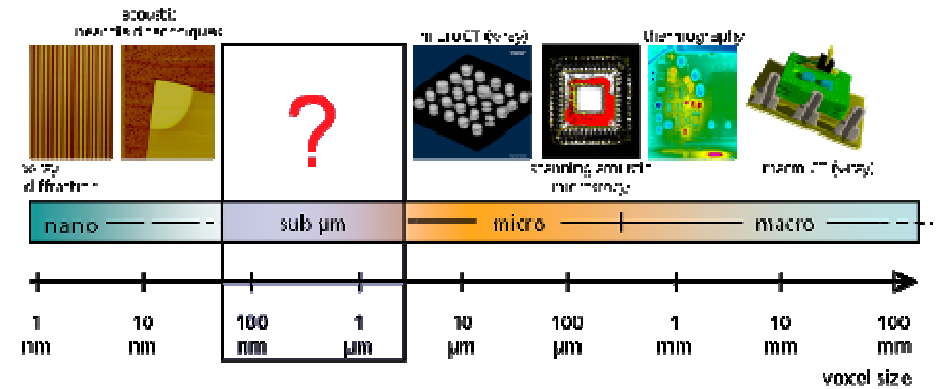
Fraunhofer IKTS, Max-Bergmann-Center Dresden, University Clinic Dresden, Centre for Environmental Research Leipzig/Halle and Namos GmbH.

Development of Evaluation Methods for Impact of Nano Particles for Human Health.



TiCN-Powder

Fraunhofer IZFP-D and TU Dresden bridge the gap in today's high-resolution non-destructive testing for packaging technologies of nano-electronics

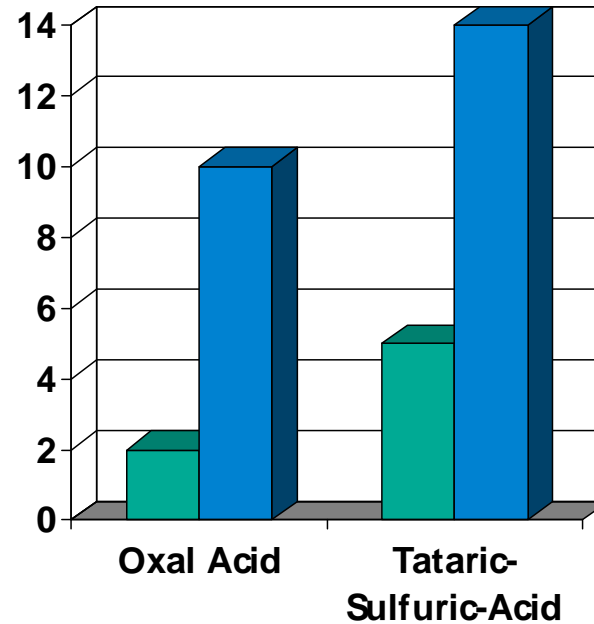


Fraunhofer Institut
Zerstörungsfreie
Prüfverfahren



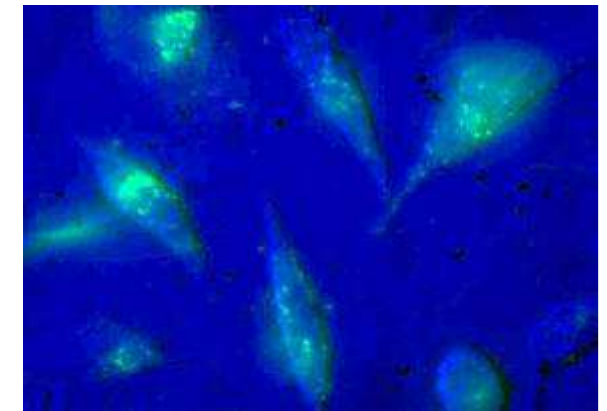
Functionalized Nano-Diamonds

- sensing corrosion
- sensing cancer cells
- for extremely reliable protective coatings



Increase of Coating Adhesion by Nanodiamonds

■ State-of-the-Art
■ Nanodiamonds



Fluorescent Nanoparticles

International Scientific Laboratory for Laser-Optical Diagnostics

Competence und Mission

Minsk
Belarus



Excellence at the Stepanov-Institute in basic research, closely integrated into Russian research cooperation, and the expertise in applied research at Fraunhofer IZFP

Dresden
Germany

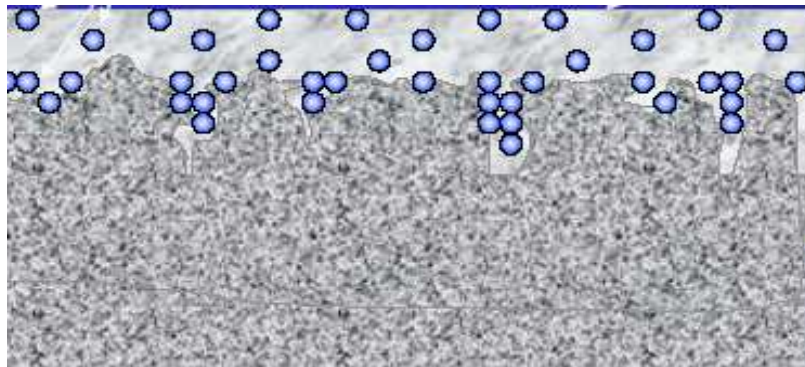


Centre of Excellence in applied Photonics and optical Metrology

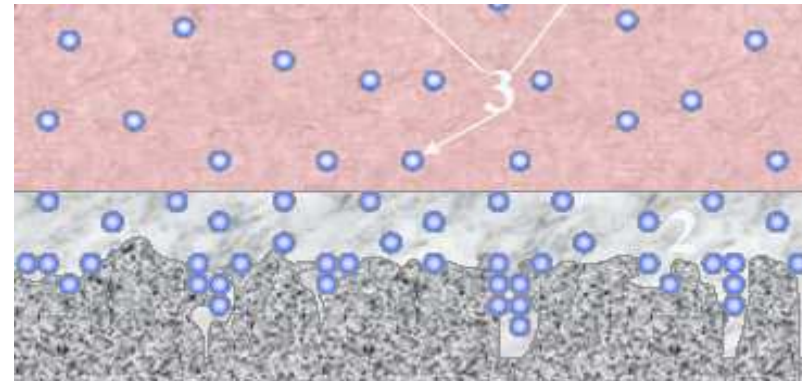
**Potent partners
at east and western
markets**

ISL-LOD-Idea in 2004/5

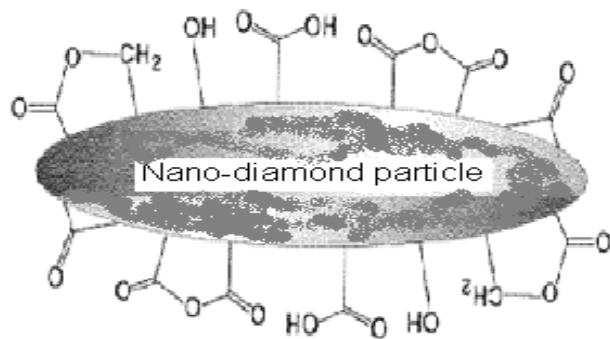
Nanoparticle-based coatings for corrosion protection



Improvement of mechanical stability
→ strengthener of anodic layer



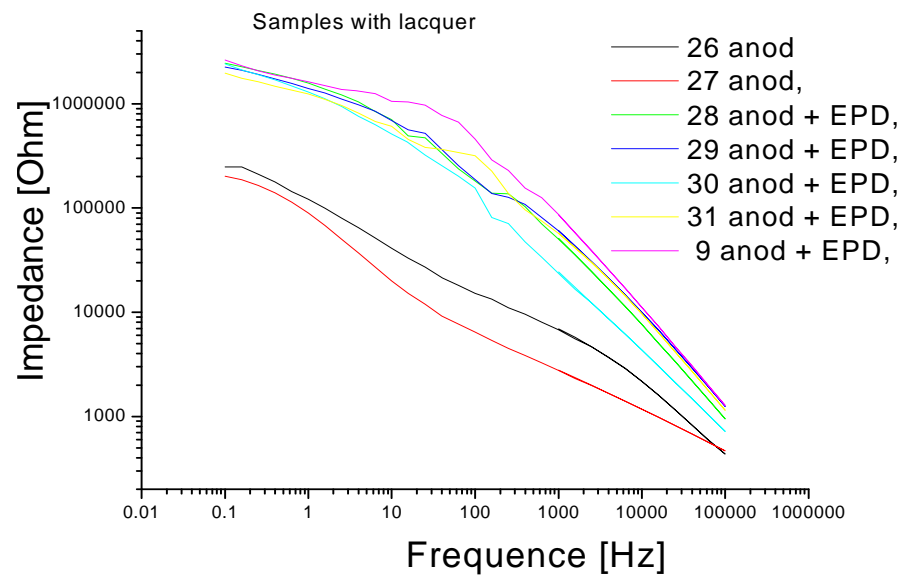
Interface improvement
→ better wetting and adhesion of top coating



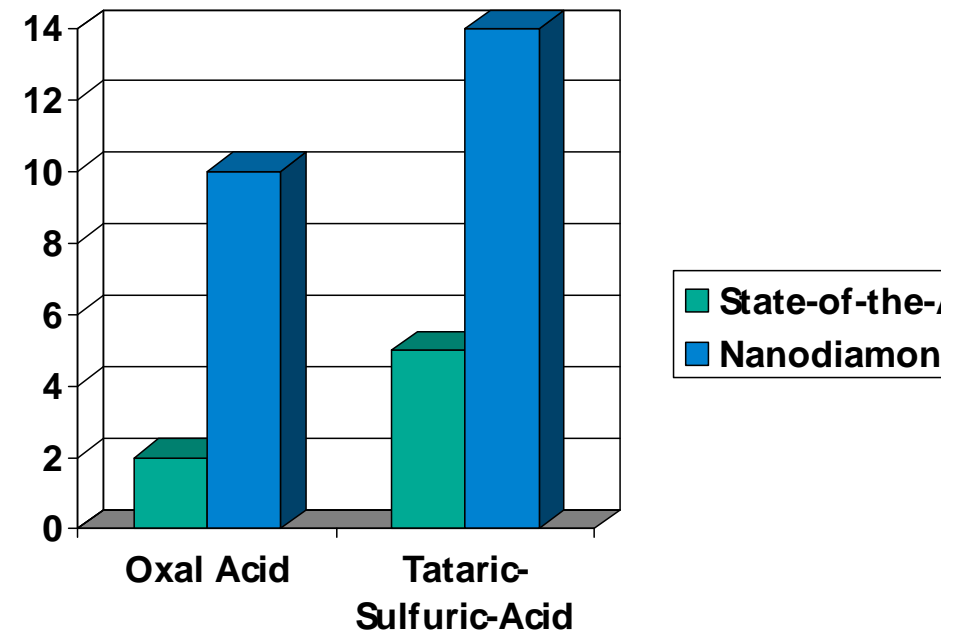
Key feature: Chemical bonding of nanoparticles
→ barrier und inhibitor effect



Screened nano-diamond particles enhance anticorrosive resistance strongly!

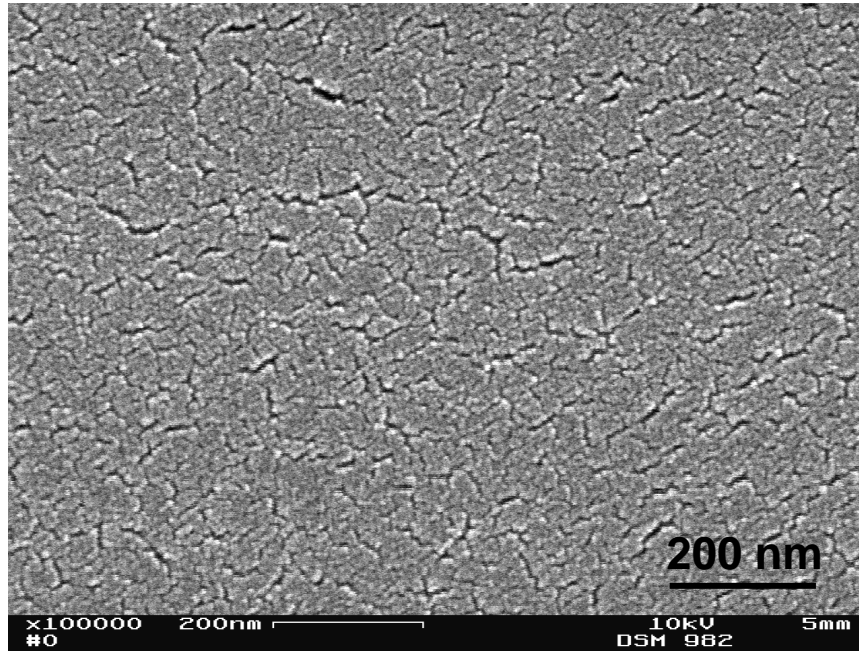


Increase of Coating Adhesion by Nanodiamonds

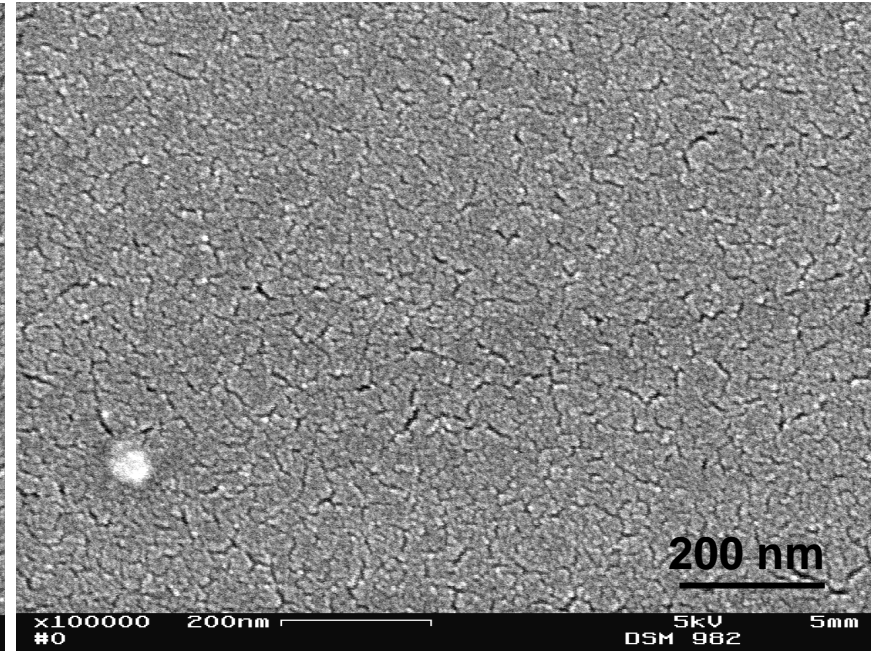


Lacquer Adhesion

SEM: Surface Structure of Lacquered Samples



Anodized sample



Anodized, CANDiT coated sample

→ Due to CANDiT: **Smother surface, less cracks** in the lacquer surface

Future tasks

Scale-up of the coating technology from laboratory to industrial standards → where are the partners? Airbus is very much restricted.

Further development of the corrosion monitoring technique.



We are searching for partners for joint projects, may be in the program of RusNano?



We are in close contact with representants of UAC in Moscow and together with our partner in Dubna (Prof. Aksenov) we search for industrial collaborator in

Saxony government is interested in collaboration

- ➔ In April 2009 the Saxony prime minister *Tillich* meets an old friend of Dresden the prime minister Putin in Moscow as well as the UAC president *Federov*
- ➔ In April 2009 Saxony business delegation stays in Elabuga and Kazan Russian and agreed to create a joint R&D-centre in the style of a Fraunhofer Institute, i.e. to realize applied research in mechanical engineering mainly for automotive industry
- ➔ Saxony is very interested in collaboration with the new IICN in Dubna, too, however, details of collaboration should be discussed at later meeting, already planned. At the beginning of September, representants of UAC will be in Dresden!



Спасибо за ваше внимание!

