

Focus surface technology



In the surface technology tailor-made materials play an important part concerning the application in high technology fields but also in industrial and durable good fields. For the custom tailoring of features nanostructured materials are of high relevance, as it is herewith possible to adjust special optical, mechanical, electronical and adaptive features. Thereby process technical as well as solid-state features are in demand.

Application fields of antireflex coatings

- Antireflection coating of all kind of instruments

- Antireflection coating of car windows (train, bus, special vehicles)
- Antireflection coating of eye glasses, windscreens, visors, sight glasses, .

The possibilities of the custom tailoring concentration of nano-particles in layers are of interest, which offers the possibility to produce gradient materials, well-ordered arrangement of nanoparticles in layer systems ("colloidal crystals" or surface modification of nano-particles and creation of special functions (e.g. coupling of bio-molecules, adjustment of special chemical reactivations or surface potentials).

Such materials include a manifold applicability, as e.g. in the integrated optic, in the construction of optical coatings, for interference layer packages, for the microelectronic and microsystem technology, but also for the industrial technologies and vehicle construction and architecture.



A basis is normally provided by nanoparticles, which are either created by a special procedure or in-situ in matrix systems and which are applied on surfaces by a wet-chemical coating technology. Thereby the range of the composition of nanoparticles (ceramic, glassy particles, semiconductor- resp. metal particles or

also polymers particles) offers in connection with nearly the same large range of matrix systems a wide scientific and technological basis for many uses.

Nanotechnological coating materials of protect surfaces of most different materials against corrosion and mechanical attacks.

Nano technology

Have you ever cleaned your glasses with steel wool? If you can find scratches on it, than the nanotechnology is not yet brought into operation. Miniature-worlds, which are only visible with ultra modern appliances, control meanwhile our life. You can find everywhere computer chips, but infinitesimally molecules contain more possibilities:

Miniscule circuitries, frictionless surfaces, which can not be contaminated and more of such things. Follow nano to the hidden worlds:

At the limit of visibility you can find the door to the



smallest world: the empire of atoms and molecules. It is only possible to have a look into this world by the use of a scanning tunneling microscope - a fine peak of charged clouds scans a surface atom-by-atom. At the same time this peak is able to monitor, but also able to take action and to move atoms.

Materials which are coated with a ultra-thin nano-coating, possess special features:

For the fabrication of scratch proofed glasses nano layers are applied on the surfaces.

The result: Such glasses can be cleaned with steel wool without getting a scratch. Nano layers are so thin, that they can not deflect or break the course of light but let pass the light unchecked.

A look into the nature can also hide many useful appliances: In Asia the lotus plant is considered as religious symbol for pureness. As liquids roll off this plant and no dust adheres on it. This is again the "fault" of nanoparticles: infinitesimally papillae

repel water. In the nanotechnology a self-cleaning ceramic is herewith created.

A further aim of the nanotechnology is the microchip- and semiconductor industry. Important elements for the big sister Microtechnology, come already today from the nanoworld. A billion € market is opened to the nanotechnology with the digital data processing. Since the internet has been developed to the most important communication network, increasing superior demands on the digital data highway has been made. Whether video conference or online-shopping, the maxim of the internet is: "more and more, more and more faster " Often this means also: "more and more smaller". Consequently the nanotechnology will be the invisible partner of the world-wide-web. Electric nano lines are developed from copper molecules, one million times thinner than a human hair.

Glass, Metal



Glass is one of the oldest man made materials. It mainly consists of silicon dioxide (SiO_2). By adding aluminium oxide, potassium oxide, calcium oxide and other components, glass can achieve various properties, most of which are well understood,; however we at nanopool are able to create glass, with hitherto unknown characteristics

Glass is an essential part of our daily life. We use drinking glasses, we cook on ceramic hobs, we sit behind glass windscreens or windows. We use glass extensively in modern architecture and glass structures are installed as constructive elements as well as design elements.

The nano-coatings are in principle pure, flexible, super-durable glass, albeit at the molecular level. These characteristics can protect glass surfaces and add extra functionality to the glass surface, making it :

- Easy-to-Clean
- Protected against aggressive environmental influence
- Protected against abrasion
- Hydrophobic
- Oleophobic
- Food safe
- Protected against glass corrosion
- Anti-microbially protected (this characteristic has massive implications for domestic, healthcare and industrial environments)

The transparency of the glass is in no way impaired by the nano-coating and importantly undesired light reflexes are not detected.

Ceramics, Plastic



Ceramics can be treated in exactly the same way as glass, for example, tiles with glazed surfaces, baths and wash basins, ceramics belong to the class of jars, as drinking and cooking vessels, as heat shields of the space shuttle especially where extreme

With our nano-coatings we can protect and enhance all types of ceramic materials and add new functionality i.e.:

- Easy Clean characteristic

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