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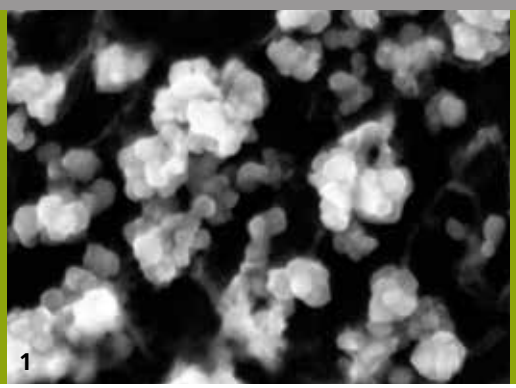
FRAUNHOFER INSTITUTE FOR CHEMICAL TECHNOLOGY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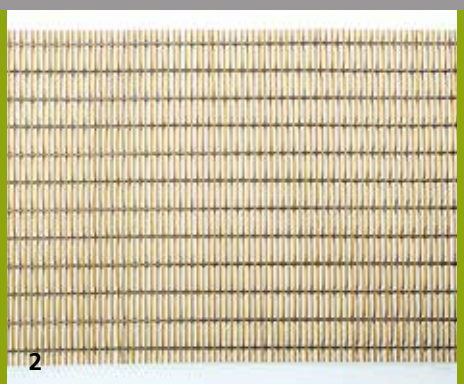
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1 *Scanning electron micrograph of nano-silver particles.*
2 *Nano-gold lacquer coating of a wire mesh.*
3 *Application of this wire mesh in an architectural facade (Source: GKD).*

MULTIFUNCTIONAL NANO-COATINGS

NANOTECHNOLOGY, COATINGS AND SURFACE FUNCTIONALIZATION

Surfaces with antimicrobial functionalization based on nano-silver

Functionalized surfaces are used for mold prevention in the construction sector. Other applications are in hospitals, the food industry and the antifouling coatings of ship hulls. Nano-silver system technology is cost-effective, sustainable and non-toxic to humans.

Surfaces with viewing-angle-dependent color effects

A color effect can be achieved by nano-coating using interference pigments. Applications include car paints or the coating of wire strips used as cladding mesh in architecture. When integrated in printing inks the pigments can be used for tamper-proof markings and protection against plagiarism.

Surfaces with temperature-adjusting thermochromic coating

Heat-balancing layers can be produced. The temperature adjustment follows a principle similar to that of latent heat storage systems, and can occur over a wide range through the selection of appropriate components.

Surfaces with plasmons / luminescence lighting effect

The plasmon effect generated by collectively oscillating charge clouds of metallic nanoparticles is supported by a luminescence effect. This can be applied for example in security markings.

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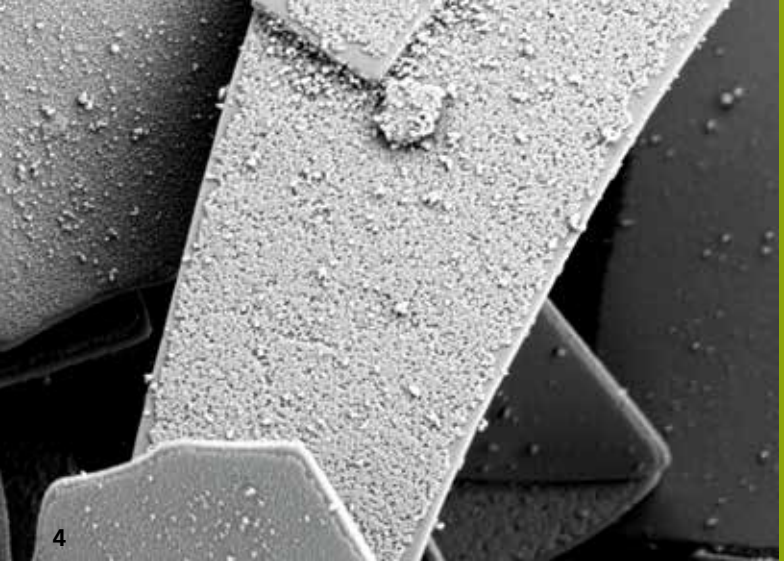

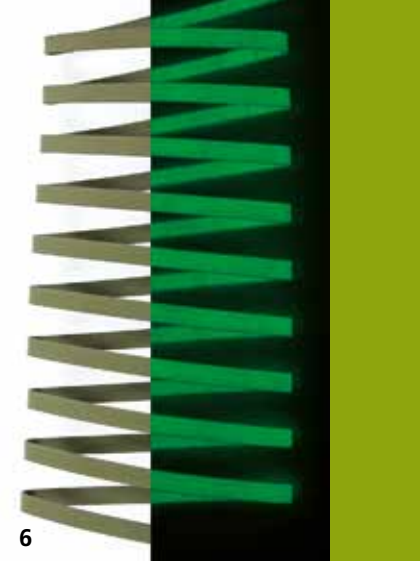

Our service offer

We offer our customers and project partners the possibility to integrate these effects into their applications.

The nano-coatings have been developed as platform technologies that facilitate subsequent adaptations using this interface.

The basic procedure is illustrated below. The left column represents the nano-technology processes. The combination with polymer chemistry then opens up numerous applications.

Project partners

Dr.-Ing. Meywald GmbH & Co. KG
Harold Scholz & Co. GmbH
GKD - Gebr. Kufferath AG

funded by:

Bundesministerium für Bildung und Forschung

ptj Projektträger Jülich Forschungszentrum Jülich

Förderkennzeichen 03X0123C

4 *Scanning electron micrograph of a nano-coated interference pigment.*
5 *Metal strip with temperature-adjusting thermochromic coating. The lower part of the image shows the heated zone (approx. 30 0C), which becomes transparent.*
6 *Metal band with plasmon / luminescence coating. The radiation effect is visible on the right of the picture.*

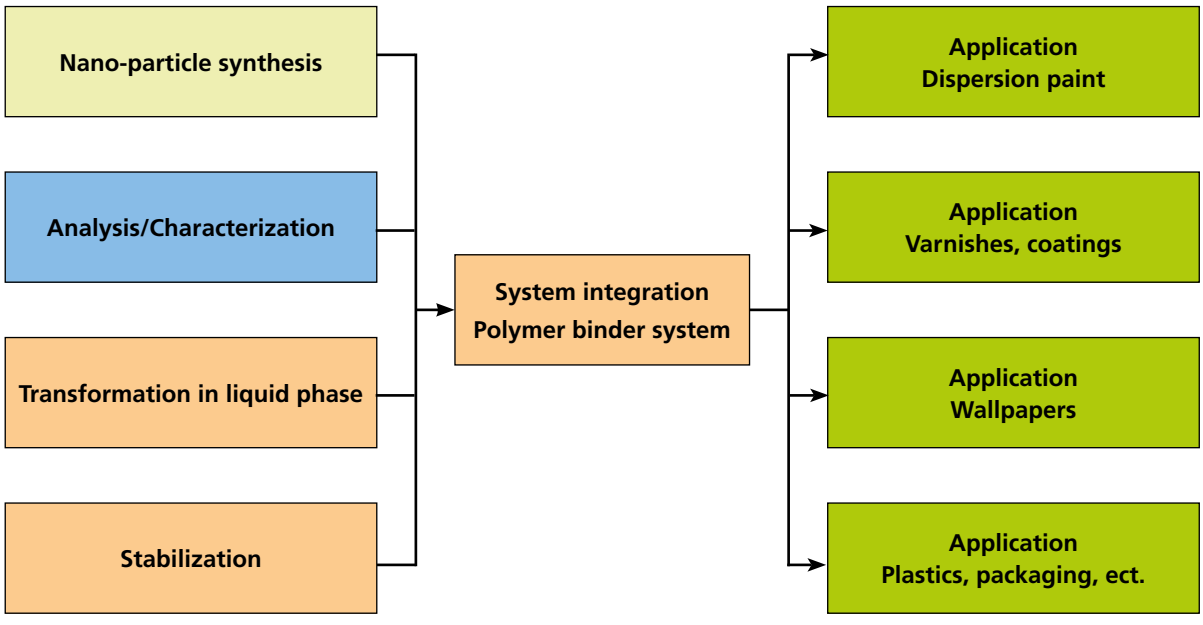

Diagram: From the active agent to the application.