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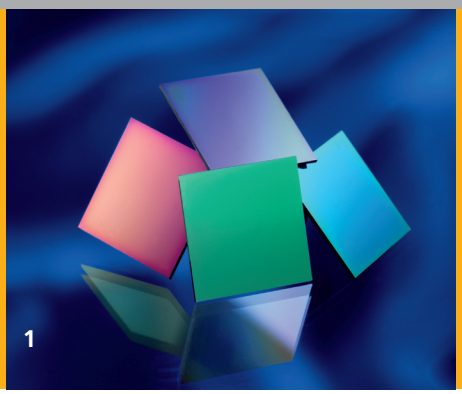
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1 *Functional thin films produced using PVD processes.*
2 *Plasma of a gas flow sputter system.*
3 *Sputtering in liquids for alloy inks.*

PVD PROCESSES FOR NANO-STRUCTURED FUNCTIONAL MATERIALS

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Component surfaces can be functionalized and customized coatings can be developed using physical vapor deposition (PVD) processes. PVD processes are used to create electrical, optical, catalytic, and even self-cleaning surfaces.

Layer properties

Surfaces can be coated with metals, metal oxides, or alloys using PVD processes. Using a co-sputtering process, composites or alloys can be deposited simultaneously or sequentially. Furthermore dense or porous layers can be deposited and density gradients can be generated.

Applications

Sputtered, highly porous thin layers are used in many fields of application:

- Soot oxidation in motor vehicle catalytic converters (e. g. Pt, Co)
- Catalytic converters for carbon monoxide oxidation (e. g. Au)
- Thermally and mechanically stable metal-ceramic composites in a co-sputtering process (e. g. Pt-Al_2O_3-Co)
- Self-cleaning surfaces with photo-oxidation (e. g. Ag-TiO_2)
- Use in gas sensors for hydrogen detection (e. g. Pt)

In combination with printing technologies, PVD processes open up various applications for producing electronic parts and components. Sputtering nanoparticles in liquids allows the production of the nanoscale inks (e. g. CuNiMn) for printing processes.