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## NANO-Textured Functional Layers for Sustainable Products

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*Abstract:* The versatile role of nano-textured layers and their advanced performances have been elucidated in selected R&D projects. The aim was to overcome the limitation of conventional thin films due to micro defects like pinholes and scratches by nano-texturing the functional layers. Our concept allows the development of highly effective diffusion barrier layers for reactive gases in order to prevent their loss to the environment during storage. A second application describes the nanoactive corrosion protection for metallic products due to the combination of a passive physical barrier consisting of a highly cross-linked hydrocarbon layer and the adjustment of the electrochemical potential by incorporating metallic clusters. Tiny amounts of added metals like zinc substitute toxic metals used for conventional corrosion protection so far which enables a management of sustainable materials.

**Keywords:** Corrosion protection · Diffusion barrier layers · Hydrogen storage · Nanotechnology