

Chemical Engineering | Technology Offer

## Surface-modified Layer System (laterally cross-linked nano-scale monolayers)

### Field of Application

Nano- or microstructured monolayers for the protection of surfaces like e. g. gold, steel or silicone.

### Current Status of Technology / Market

Surfaces are usually protected against corrosive influences and mechanical stress by means of physisorbed thin films such as oils, waxes, varnish or plastic. Such conventional layers exhibit nevertheless only very limited resistance to mechanical forces because the protective film is only bound to the surface through dipole and van der Waals forces. To improve adherence of these films, coatings have been developed which form chemical bonds with the surface. Such layers are however difficult to cross-link laterally. Weak points that result from this are the target for corrosive action where the destruction of the protective layer commences and from where it then progresses.

Further applications for laterally cross-linked monolayers, besides protection from corrosion, are the production of defined structured surfaces, e.g. of electrodes, sensors, negative resists and masks. Surface-modified layer systems which can be laterally and densely cross-linked quickly and reliably by means of well known and proven techniques would be attractive for these applications.

### Innovation

The new layer nanotechnology which exhibits the required characteristics has been developed at the Institute for Applied Physical Chemistry of the University of Heidelberg.

The novel coating system is based on laterally cross-linking monolayers composed of aromatic compounds by applying an electron or photon source.

### Your Gain

The application of this novel surface layer system results in particularly thin monolayers (e.g. 1-3 nm) with very high density. These monolayers are further characterized by a very high mechanical stability and temperature resistance. They can be used for structuring and protection of surfaces. Optionally, metals can be deposited onto the monolayer system producing a organic thin film insulator which can be used e.g. in microelectronic devices.

### Technology Transfer

The Technologie-Lizenz-Büro GmbH has been charged with the commercialization and now offers companies the opportunity to obtain a license to apply this new and promising technology.

### Patent Portfolio

US-Patent No. 6,764,758 and patents in Germany, Great Britain and France are granted.

### For further information on "Surface-modified Nano-Scale Layer System", please contact:

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