

Immobilization of TiO_x layers on polymers (and pollutant degradation)

Transfer offering

Titanium oxide (TiO_x) coatings are photocatalytically active when exposed to UV radiation, i.e. radicals are formed which decompose organic substances. Thus, these coatings are used e.g. in the field of air and water purification, as antibacterial or so-called "easy-to-clean" surfaces as well as in solar technology. The photocatalytically active modification of TiO_2 (anatase) is formed at $400^\circ C$.

Approach

INNOVENT has developed TiO_x coatings using sol-gel processes, which are photocatalytically active at a drying temperature of $80^\circ C$.

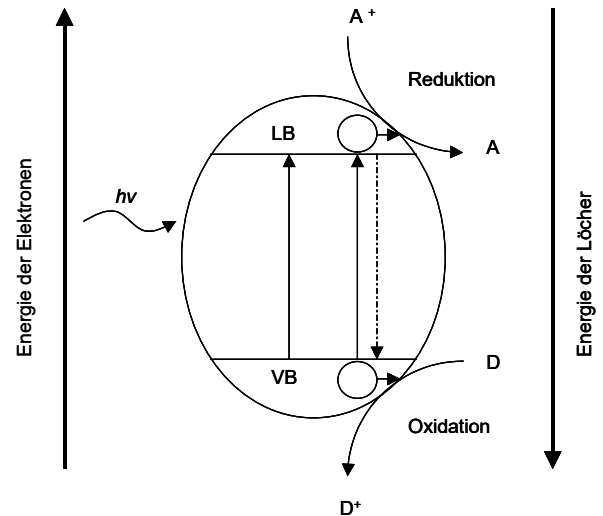
The investigation of the photocatalytic activity was based on the degradation of methylene blue solution according to DIN 52980.

Advantages

- photocatalytically active TiO_x coatings at low temperature stress of the substrate
- thus particularly suitable for temperature-sensitive materials such as polymers
- comparable with commercially available coatings

Development status and property rights

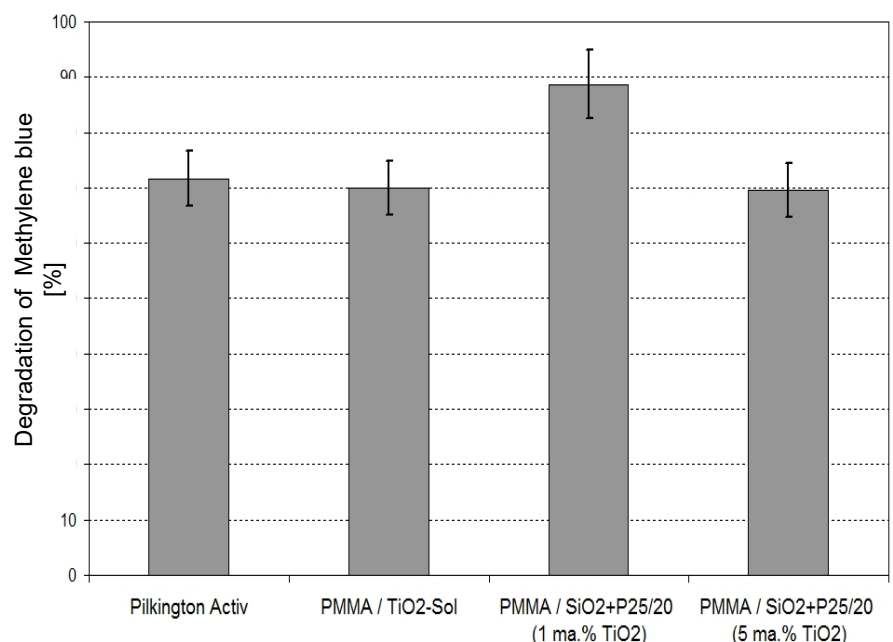
Photocatalytically active sol-gel coatings are available for float glass and PMMA, which are dried at low temperatures and whose activity is comparable to commercially available products.



principle of the photocatalytic effect



Methylene blue solution before (left) and after 3h UV irradiation (right)



Photocatalytic activity of TiO_x sols developed at INNOVENT on PMMA compared to a commercially available TiO_x coated glass (Pilkington Activ)