FLUOROPOLYMERIC ENCAPSULATION OF TITANIUM DIOXIDE INDUCED BY γ-RAYS

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Titanium dioxide (TiO_2) is a white pigment widely used in the paints industry and encapsulation of TiO_2 particles by fluorinated polymers is highly desirable, since this would significantly hinder coagulation of pigment particles and could retard TiO_2-assisted photodegradation of the paint matrix.

We have recently found that rutile TiO_2 pigment particles suspended in the $CF_2ClCFCl_2$ solution of methacrylic acid and the various fluorinated monomers ($CF_2=CF_2$, $CF_2=CH_2$ and $CClF=CF_2$) can be encapsulated by γ-ray induced polymerisation.

The chemical character and relative thickness of these polymeric coatings has been determined by X-ray photoelectron spectroscopy (XPS). Preferential polymerisation has been shown to occur at the TiO_2/solution interface and possible mechanism will be discussed.