Application note n° 67

V1

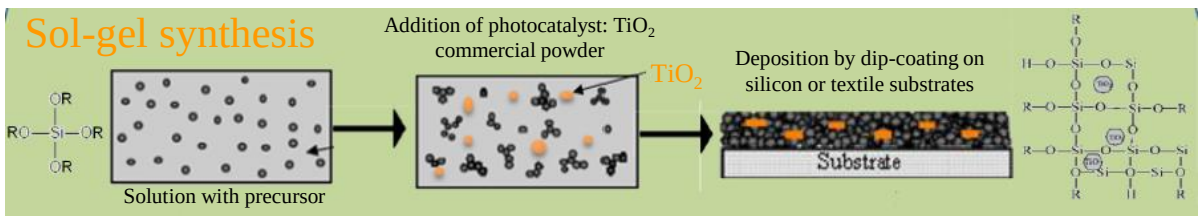
Photocatalytic TiO_2-based coating on flexible materials for building applications - 2

Subject: **Physico-chemical characterization of composite materials with photocatalytic properties (textiles and paper) and correlation with photocatalytic tests**

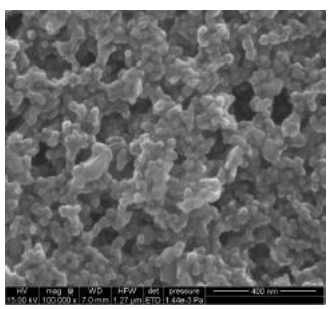
Techniques: SEM-EDS, XPS, ToF-SIMS

- ✓ **Morphology and chemical composition of the surface**
- ✓ **Correlation of surface analyses with photocatalytic and photo-aging tests**

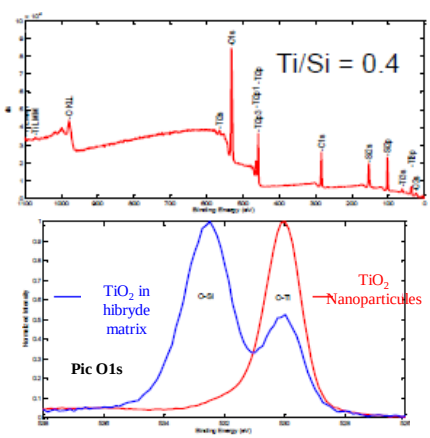
Results: TiO_2 particles included in a sol-gel material



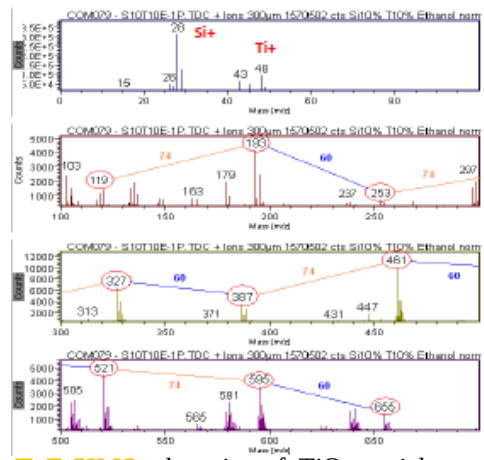
Surface characterization



SEM : porous sheet achieved **without** surfactant

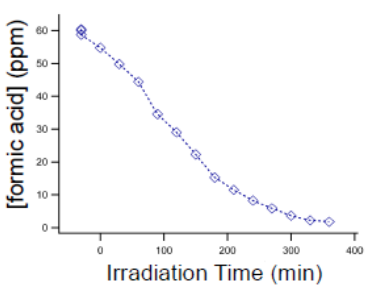


XPS : **Availability** of TiO_2 particles at the extreme surface.



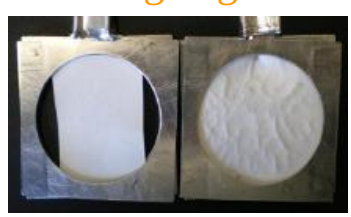
ToF-SIMS : detection of TiO_2 particles at the extreme surface by the positive mode

Photocatalytic test



Degradation of pollutants after 360 min of UV exposure

Photo-ageing



Treated textile (PVC) — Untreated textile (PVC)

Protection of substrate

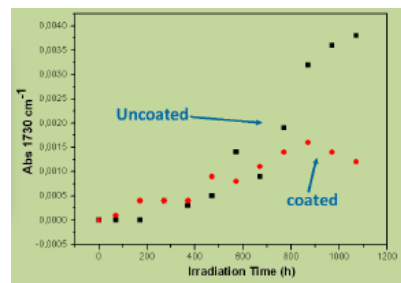


Photo-oxidation treated and untreated PVC

Conclusion :

Surface characterizations and photo-ageing tests highlight the protection of the substrates due to the photocatalytic activity of TiO_2.

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