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**Collaboration  
between  
COST Actions  
543, 540, P19**

## **Training School on 'Environmental Applications of TiO<sub>2</sub> Photocatalysis'**

**Arranged by the COST Actions 543, 540 and P19**

**on May 4-8, 2009 at University of Oulu, Linnanmaa Campus, Dept. of Process and Environmental Engineering, SkyPro Oulu and Cewic (Thule Institute).**

### **General information**

Photocatalytic reactions - such as photosynthesis - constitute the basis of life on earth. The catalysis of reactions by sunlight or artificial light - known as "photocatalysis" - is also a familiar phenomenon in the world of science and technology. Extensive research has already been conducted on the photocatalytic effects exerted by certain solids, e.g. TiO<sub>2</sub>. More recently, attention has been focused on oxidative photocatalytic reactions which open up exciting prospects for the oxidation of organic components and the purification of drinking water. Titanium dioxide TiO<sub>2</sub> has already been subject to intense scientific community; several processes involving the use of TiO<sub>2</sub> - in particular, reactions suitable for water purification - are nearing the commercialization stage. In contrast, surface technology based on the use of TiO<sub>2</sub>, e.g. to oxidize organic components (including microbes) or to make surfaces hydrophilic, has attracted intense interest only recently. Despite this short development period, numerous applications are approaching - or have already reached - the stage of serial production. Whereas in Japan a remarkable number of companies are already producing - or planning to produce - surface technologies for keeping surfaces clean or free of microbial contamination, the focus in Europe has been more on water treatment. The use of photocatalysis in hydrogen production has also gained increased interest according to the recent literature. Materials design plays a crucial role in this development work. Comparison of the new routes and methods to produce hydrogen from different biomaterials and wastes will be highlighted during the training school. The Training School covers some of the more exciting topics on TiO<sub>2</sub> applications in recent years by an internationally renowned team of speakers, who are active in the field of TiO<sub>2</sub> photocatalysis and TiO<sub>2</sub> materials science and engineering.

**Preliminary Topics:** Photocatalysis and preparation of photocatalysts (Theory, sustainability), Environmentally benign routes (e.g. photocatalytic, biochemical, chemical) and starting materials in hydrogen production for e.g. fuel cells and photoreactors, Photocatalysis in water purification, Photocatalysis in textile industry and in controlling the fouling phenomena on surfaces and Modeling the photocatalytic phenomena and materials

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