

UV absorbing nano particles

To prevent materials from the damaging effects of UV light, UV absorbing organic compounds are added to coatings, plastics and cosmetics. In some aspects inorganic absorbers have superior properties: they do not migrate and are more stable.

With financial support of SIA (Raak Pro), Kriya Materials, DWI an der RWTH Aachen, TNO, Nanohouse and Zuyd University of Applied Science have developed several surface modified nanoparticles and doped particles to diminish the photo catalytic effect of nanoparticles and improve the dispersion in several matrices. One of the applications is a coating for solar cells to improve the life-time of solar panels.

Research Centre for Material Sciences

The aim of the Research Centre Material Sciences is to facilitate sustainable innovative research and development in the field of polymeric materials; connecting innovation and learning.

Focus in our research is on three key technologies: MicroReactor Technology, Nano Technology and 3D Printing Materials.

Special Research Centre for Solar Energy in the Built Environment

This special research centre is involved in the integration of solar panels in the built environment and the use of innovative materials for solar energy applications. Their target group is companies in the south-east Netherlands.



Partner of

Chemelot Innovation and Learning Labs



NEW CONNECTIONS - NEW SOLUTIONS

Project period

January 1, 2012 - January 1, 2016

Grant

SIA Raak Pro

Project leader

Gino van Strijdonck Ph.D.

Research partners

- TNO
- Nanohouse
- Kriya Materials
- DWI an der RWTH Aachen.

Contact

See the websites of the Research Centre for Material Sciences and Research Centre for Solar Energy in the Built Environment on www.zuyd.nl/onderzoek or contact:

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Introduction

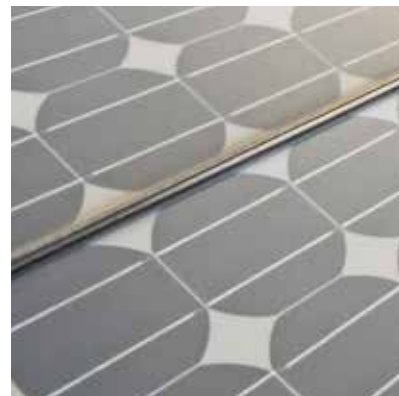
Applications with inorganic absorbers are hampered by the high concentrations needed and the scattering of light. In principle these problems can be solved by using nanoparticles. But these particles are difficult to produce and, depending on the application, need to be surface modified to disperse in a matrix. Furthermore, these particles show a photo catalytic effect i.e. light induced formation of material damaging radicals.

Project

Although we are making progress in hampering the photo catalytic effect, this still needs improvement. Promising results, however, are obtained in terms of refractive index which has resulted in a demonstrator coating for anti-reflective applications and recently we have used Zinc oxide nanoparticles for down conversion i.e. transforming higher energy photons which are not converted to energy in a solar cell to lower energy photons which can be converted to electricity.

Results

Since nanoparticle technology is not widely used yet and both education and specific applied research is needed. Thus also in this program a master class was developed. Furthermore, inorganic chemistry and nanotechnology are now included into the curriculum of Zuyd University.



Grant

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Research Partners

NANO House

KRIYA MATERIALS

DWI
an der
RWTH AACHEN
UNIVERSITY
Material Research

TNO
innovation
for life