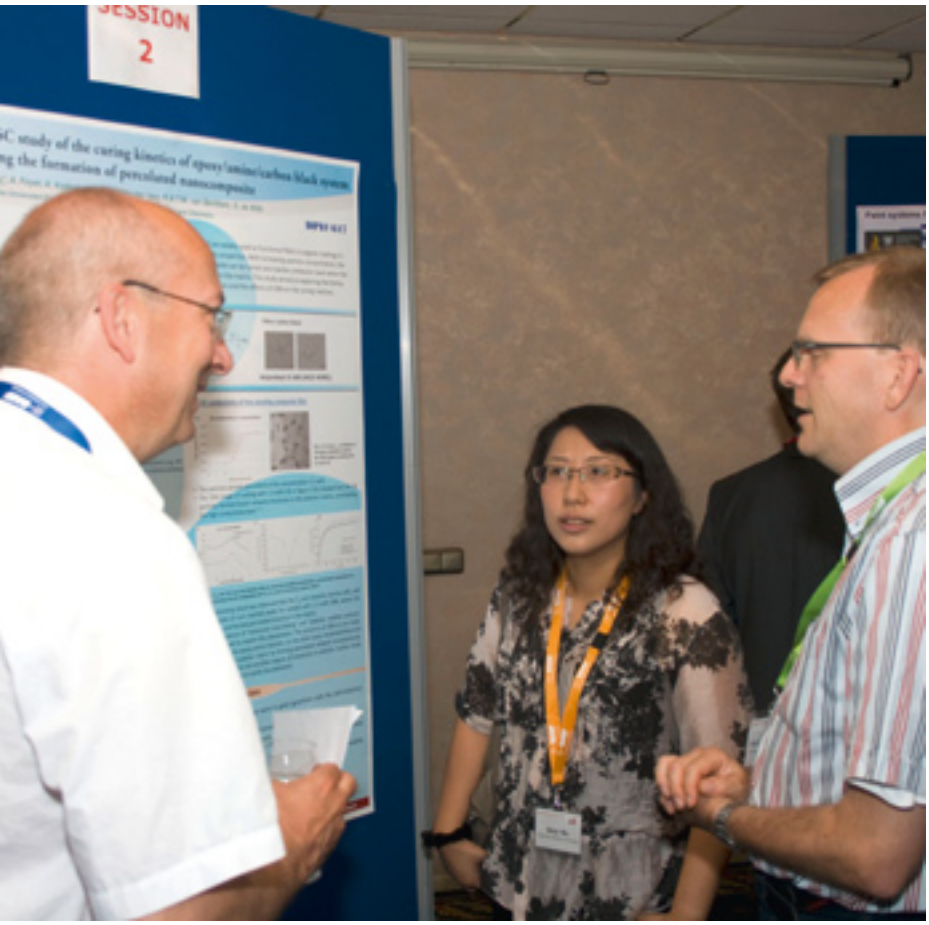

Attendees of the CoSi conference 2010 took the opportunity to engage in lively discussions

Scientific backgrounds

Coatings Science International Conference presents latest coating developments

Kirsten Wrede

In the beautiful Dutch seaside village of Noordwijk, the Coatings Science International Conference - in short: CoSi 2010 – took place from 28 June to 2 July, 2010. As in the past years, the conference put a clear focus on the scientific backgrounds of the newest technological developments relevant to coatings.

Again, the CoSi conference offered a convenient platform for free exchange of scientific knowledge between both academic and industrial scientists from all over the world. As chairman Prof. *Rolf van Benthem*, Eindhoven University of Technology, put it, 2010 was a special year for the conference. For the first time, more than 160 abstracts had been submitted for the conference program. 32 of them were finally selected for presentation, with 20 talks given by university speakers and 12 lectures coming from industrial institutions. With 140 attendees – 85 from academia and 55 from the industry – also the number of participants was higher than ever before. While the majority of the attendees from 27 different countries came from Europe, van Benthem emphasised that also Asia was well represented.

The conference was divided into ten sessions, covering weathering and degradation, hybrid materials and nanocomposites, material characterisation and modeling, pigments and colorants, corrosion protection, functional coatings, waterborne systems, textured coatings, and applied coatings.

Subjects of the conference

Due to different expectations and backgrounds of the attendees, it is hardly possible to pick out "the" highlights of the conference. Nevertheless, several interesting talks will be summarised in the following.

Video interviews on new developments: www.european-coatings.com/videos/

The very first presentation kicked off the session on weathering and degradation. Dr. *Tinh Nguyen*, National Institute of Standards and Technology, USA, investigated the degradation and nanoparticle release of an amine-cured epoxy coating containing multi-walled carbon nanotubes and silica nanoparticles exposed to UV radiation. Based on experimental results, one of his conclusions was that polymer chains in amine-cured epoxy nanocomposite coatings undergo photodegradation under UV radiation, resulting in a substantial mass loss and a marked increase of nanoparticle concentration on the coating surface. According to Nguyen, the results of his study provide valuable information to assess the potential risk of nanoparticle release from expoxy coatings during service.

Biobased approach

A lot of attention was paid to a biobased approach: Dr. *Funda Tihminlioglu*, Izmir Institute of Technology, Turkey, presented a study that investigated the feasibility of prepared novel corn-zein nanocomposite (CZNC) coated polypropylene film (CZNC-PP) structures for food packaging applications. The good oxygen barrier of corn zein was successfully combined with mechanically strong PP for food packaging. The incorporation of organomodified montmorillonite layered silicate into the corn-zein matrix improved the oxygen barrier and the mechanical properties of the corn-zein coated bilayer PP film. The results of the study showed that corn-zein nanocomposite coatings could be used as a barrier layer in food packaging applications.

Sonochemical coating

Two sessions were dedicated to functional coatings, reflecting the high interest in this exciting field of technology. Prof. *Aharon Gedanken*, Bar-Ilan University, Israel, talked about the coating of surfaces by sonochemical methods. When ultrasonic waves collapse near a solid surface microjets are being formed directed towards the solid surface. These microjets are moving at very high speeds >200 m/sec. This phenomenon can be used for coating nanoparticles on metals, polymers, glasses, ceramics, textiles, and paper. In his presentation Gedanken explained a few applications of this method, one of which is the coating of antibacterial nanoparticles on textiles and glass.

Spectrally selective coatings

Polymer-based pigment coatings on flexible substrates with spectrally selective characteristics to improve the thermal properties were the topic of Dr. *Jochen Manara*, Bavarian Center for Applied Energy Research, Germany. Spectrally selective coatings on flexible substrates considered in his work combine a customised colour (or visual appearance) with a low emittance in the infrared spectral range. In order to realise the desired properties, polymer-based pigment coatings were developed, optimised and characterised.

Source: Gerard Scholten

Dr. Volkmar Stenzel (left) received the Innovation award from Prof. Bert de With

Networking and award winners

The local organisation of the conference was handled by van Benthem and Prof. *Bert de With*, along with their team of Eindhoven University of Technology. In addition to the technical presentations, the conference was complemented by various networking opportunities.

At the end of the conference the CoSi awards for Science, Innovation and Creativity were given to this year's winners. Prof. *Christine Jérôme*, Center for Education and Research on Macromolecules (CERM), University of Liège, Belgium, received the Science award for the best scientific paper. She presented her research on biomimetic coatings with robust antibacterial properties.

Dr. *Volkmar Stenzel*, Fraunhofer Institute for Manufacturing Technology and Applied Materials Research (IFAM), Germany, won the Innovation award for the most interesting new development presented at the conference. His presentation focused on drag reducing paints for the reduction of fuel consumption in aviation and shipping.

The Creativity award for the best poster went to Dr. *Catarina Esteves*, Eindhoven University of Technology, The Netherlands, for her presentation on superhydrophobic self-replenishing coatings through the design of surface topology and chemistry. The jury consisted of members of the CoSi organising committee.

Find more information at www.coatings-science.com