Current state of development

The fourth Coatings Science International Conference in Noordwijk, Netherlands

Mariëlle Wouters

118 delegates including some last-minute registrations attended the fourth Coatings Science International Conference which took place from 23 to 27 June in Noordwijk, the Netherlands. 33 oral presentations along with 34 poster presentations offered an interesting overview of the current state of scientific developments that are currently under the attention of industry and academia.

The 33 oral presentations given at the conference were of high quality

The participants of the conference were almost evenly divided over academia and industry originating from 23 different countries. This year there was a significant contribution from Asia (almost 16 % of all attendees).

The 33 papers that were accepted to the conference (over 85 abstracts were submitted) resulted in a varied program that was nicely balanced between academic and industrial papers. Among the industrial papers, there was a variety of presentations from paint manufacturers and suppliers. In combination with the more fundamental approach of the academia the program showed a multi-disciplinary field of interest for the coating technologist. This interest was clearly visible during the lively discussions after the lectures and during the breaks.

This year there was a relatively large amount of posters presented. The posters were of high quality and a representation of the field of expertise of the delegates. The technical papers were first-class as well and showed the different topics that are important at this moment. The program was divided in 9 'headlines' that are briefly illustrated by some highlights being presented below.

Start with weathering session

The conference started with a session on weathering. *Jonathan Martin*, National Institute of Standards and Technology, opened this session with a lecture on the development and application of a non-destructive technique to determine the degradation of epoxy based systems. This technique was developed for lab-scale use and it was important to investigate the correlation of the outcome with outdoor testing. The effect of spectral date (i.e. UV intensity, UV wavelength range), temperature and relative humidity were explored in detail. Results showed that outdoor exposure and lab-experiments correlated very well with respect to degradation mechanisms, even when the coatings were exposed outdoors to different seasons.

The corrosion session was the most lively session of the conference with respect to discussion after the lectures. *Adolphe Foyet* from Eindhoven University of Technology presented a clear introduction in the field of electrochemical impedance spectroscopy. This technique is becoming more and more important for coating

characterisation, and is not always easy to understand. During his presentation Foyet guided the audience through the different experimental set-ups and the interpretation of the data. During his lecture Foyet used an epoxy based coating as an example of the applicability of this technique to study moisture sensitivity and corrosion performance of the coating and its substrate.

Diverse contributions on 'New Vistas'

During the session on 'New Vistas' there were three completely different contributions. The presentation by *Björn Weber* from University of Paderborn covered the use of melamin as base material for different structures at different length scales. The processing of the melamin results in different types of structures; platelet-like nanoparticles that are the building blocks of larger structures such as (thermo-reversible) gels. *Mariëlle Wouters* from TNO Science and Industry presented the concept of a thermo-reversible crosslinked powder coating with good coating properties as a first step towards smart coatings that are interesting for self-healing coatings. The third contribution in this session was somewhat special with respect to application. *Thomas Zwieg* of Larsen Strings A/S presented the use of resins to improve the performance of musical strings. It was an interesting field of application where the audience learned that surface modification could result in a dramatic effect of performance of the strings for bowed instruments.

The session on radiation curing was also quite diverse. There were lectures on monomers, photoinitiators and additives. *Ralf Knischka* of Ciba introduced the advantages of NIR-curing and the development of a new additive that absorbs wavelengths in this region to improve the processability of the formulation by reduction of the curing time. Even NIR-reflecting pigments such as TiO_2 can be used when the new additive is present in the formulation. Up to 0.5wt% of this additive had no negative effect on transparency, discolouration or weathering.

The nanotechnology session was composed of lectures on functional nano-particles as well as coatings and composites containing nano-particles. In this session a dual presentation by *Anne-Lise Troutier* from University of Blasé Pascal and *Horst Hintze-Bruening*, BASF, on the synthesis and characterisation of layered-double-hydroxides and the use of these particles in coatings made a nice combination of both worlds. The presentation covered the chain of knowledge from synthesis to ultimate coating properties such as 'stone chip resistance'. The organising committee honoured this dual presentation with the conference's 'Science Award' for the best scientific lecture.

Chemistry and environment

The chemistry session covered different aspects where chemistry and environment are connected. One of the lectures was given by *Masaaki Saika* from Kansai Paint Co. on environmental benign binder material, i.e. CO_2-neutral modified corn-starch. The lecture by *Joost van Dijk*, Akzo Nobel, was given on the saving of time and energy on the curing of a 2K decorative coating. The shortening of the reaction time without unfavourable effects on pot-life, mechanical properties of the coating and its adhesion was successful. This effort resulted in the 'Innovation Award'.

The interphases and adhesion session was a diverse collection of lectures all related to adhesion in one way or the other. From the characterisation and fundamental understanding of adhesion (*Alexander Fedorov* from University of Groningen) via the improved adhesion of fillers to a matrix material, and plasma deposition of functional materials in thin layers, towards the prevention of adhesion by polymeric brush coatings (*Tessa ten Cate* of TNO Science and Industry). Adhesion is an important property and during this session it became clear that it is not that easy to determine adhesion of two materials.

As it is now a kind of tradition, at the end of the conference the best poster is awarded with the 'Creativity Award'. This year there were two winners; *Przemyslaw Malanowski* and *Wilfred Kleinjan*, both from Eindhoven University of Technology were rewarded for their poster presentation.

Next Conference in June 2009

Next year Coatings Science International 2009 will take place from 22 to 26 June 2009.
A Call for Papers will be launched shortly, further information can be found at www.coatings-science.com

Proceedings of this year's conference will be published in a special edition of *Progress in Organic Coatings*, presumably January 2009. ■

The fourth Coatings Science International Conference in Noordwijk, Netherlands, was well attended