International Association of Physical Chemists

IAPC International Association of Physical Chemists

Report

PCMDDD-4

4th World Conference on Physico-Chemical Methods in Drug Discovery and Development

September 21st–24th 2015
Red Island • Croatia

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Following the first three successful PCMDDD conferences (Rovinj 2009, Zadar 2011 and Dubrovnik 2013), the *International Association of Physical Chemists* organized the *4th World Conference on Physico-Chemical Methods in Drug Discovery and Development* (PCMDDD-4) held 21–24 September 2015 on Red Island. This year, the conference reached two important turning points. First, starting from this year, the PCMDDD series of conferences has switched from a biennial to an annual event schedule, alternating between European and other world locations. Second, this year the Conference was organized as a joint event with the *1st World Conference on ADMET and DMPK*. The intention was to bring together scientists working in different but closely related areas of pharmaceutical research, from analytical and medicinal chemistry to pharmacology and pre-clinical development, and in a relaxed atmosphere discuss and rationalize their results and challenges.

The Scientific and Organization Committee (Alex Avdeef, Elena Boldyreva, Biserka Cetina-Čižmek, Mario Grassi, Ulrich Griesser, Rolf Hilfiker, Josef Jampilek, Zoran Mandić, Sibylle Neuhoff, Christos Reppas, Marti Rosés, Stanko Srčič, Kiyohiko Sugano, Krisztina Takács-Novák, Kin Tam, Klara Valko, Hong Wan) compiled a well-balanced scientific program.

The topics covered the broad range of methods used in successful drug candidate identification and development. Determination of ADME/Tox properties through *in vitro* assays was discussed. Particular attention was paid to the evaluation and improvement of critical drug parameters that determine the fate of the drug, from its administration, remedial action to its excretion. Roughly, the sessions about recent advances in the following areas were organized: *physicochemical/activity profiling of drug substances, polymorphism and solid state characterization, ADME and DMPK, computational methods and modelling in drug discovery, preclinical studies and drug development*.

Fig. 1 – Welcoming speech of assoc. prof. Zoran Mandić at the opening ceremony of the 4th World Conference on Physico-Chemical Methods in Drug Discovery and Development (PCMDDD-4)

In addition, the evening session of the "*Panel of Solubility Experts*" was organized and moderated by Alex Avdeef. His intention was to address some issues about solubility data quality and discuss ways in which (i) to improve the quality of future measurement of thermodynamic solubility, and (ii) to normalize existing data for pH and temperature effects to extract useful intrinsic solubility values. The vigorous discussions that took place in this session will result in the publication of a White Paper dealing with the best practices and methodologies of solubility measurements, particularly those of drug substances.

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Fig. 2 – All 36 lectures throughout the conference were attended well

Fig. 3 – Discussion during the evening session "Panel of Solubility Experts" which was as organized and moderated by Alex Avdeef. The discussion resulted in valuable conclusions which will be published in a White paper describing the best practices about solubility measurements, particularly those of significance for drug development

Overall, about 150 participants from almost 30 countries attended the conference. There were 36 talks delivered by highly prominent and respected speakers who have made and are still making significant progress in the field. They had been selected due to their past credentials and distinctive vision of the future.

As a pre-event to the PCMDDD-4 conference, the 2nd *European Summer School on Drug and Formulation Development* (ESSDFD-2) was organized. It was a three-day intensive course designed for students and pharmaceutical researchers who wish to broaden their knowledge and advance in the career. The aim of the ESSDFD-2 was to provide a relaxed but stimulating environment for students and other participants to attend the lectures, to establish a long-term relationship among participants, and to encourage the vigorous and fruitful interactions and discussions. The ESSDFD-2 addressed all aspects of a complex process of advancing a successful drug candidate to the pre-clinical trials, and eventually to the market. Both traditional and modern approaches to drug formulation development and corresponding methodologies were also covered. The ESSDFD-2 provided approximately 20 hours of lectures by the world's leading experts from both industrial and academic backgrounds. The program was roughly subdivided into drug development and drug formulation sessions, and it included virtually all topics of relevance to the drug and formulation development.

Finally, on the last day of the conference, a joint session was organized with the "Application of NMR in the Pharmaceutical Industry" conference organized by the Faculty of Natural Sciences, University of Zagreb.

Fig. 4 – Prof. Kin Tam from the University in Macau presenting the potentials of Macau University Campus as a venue for the next IAPC meeting (IAPC-5) to be held from August 26-29, 2016

The feedback of the participants was very positive. On the SOC meeting, it was decided that the next conference would be organized at the University of Macau in August/September 2016.