



# Professor Dr. Rudy Koopmans

A series of lectures on



## Lecture 1, Monday 23rd, 14.00-17.00 (XM5): The PICC: Facing Innovation

Introducing the Plastics Innovation Competence Center (PICC) in Fribourg, Switzerland. An approach to innovation to bring Science and Technology closer to the Industrial practice. A brief overview is presented on Innovation understanding illustrated with several examples. The relevance of intellectual property and the importance of multi-disciplinary collaboration are highlighted.

## Lecture 2, Tuesday 24th, 14.00-17.00 (XM5): Open Challenges in the Field of Rheology

Making polymers flow is an essential feature for shaping plastic objects. One way of controlling the flow behaviour of polymers is to control their molecular architecture. However, predicting the associated rheological behaviour accurately remains challenging. It reveals mainly what is not understood and what (new) tools are needed.

## Lecture 3, Wednesday 25th, 14.00-17.00 (XM5): Polymer Processing – The Classics and Somethings Different

In contrast to metals or inorganics, processing entangled polymers significantly affects the detailed organization of the very long molecules and the ultimate macroscopic properties of the plastic products. Extrusion blown film and blow molding are classic processing examples. Flow instabilities remain however a major issue in these and many other processing techniques. A brief review on extrusion techniques is followed by the intricacies of flow instabilities.

## Lecture 4, Thursday 26th, 14.00-17.00 (XM5): On Foams

Porous materials are versatile structures that bring many advantages from light weighting and materials savings to insulation and energy savings. But how is it actually done to make foams out of plastics. Some closer scientific insights on thermosetting and thermoplastics foams are discussed.

## Lecture 5, Friday 27th, 14.00-17.00 (XM5): Omniphobic Surfaces: A Scaling Challenge

The principle of super hydrophobicity seems to be well understood. The practical realisation of “non-sticky” surfaces however still remains far from present in many plastics applications e.g. food packaging. Food residues in packages account for about 90 million tons of waste in the EU every year. The science and technology for developing and scaling omniphobic surfaces is elaborated.

## Lecture 6, Friday 27th, 14.00-17.00 (XM5): Plastic Fantastic - A Few Conceptual Ideas and Some Philosophy

Plastics have become the ultimate “bad materials endangering the worlds’ environment as well as human and animal health”. Is this an “urban myth” or an imminently threatening reality and if so what needs and can be done about it. A look at the reality of plastics use and some approaches on how things can be done different.

### Speaker

## Professor Dr. Rudy Koopmans

Prof. Dr. Rudy Koopmans aims to foster creative thinking that stimulates innovative science and technology, and application development that contribute to a sustainable society. Presently, he is Director of the Plastics Innovation Competence Center, Director of the Institute of Applied Plastics research, and Professor at the University of Applied Sciences (HEIA-FR) at Fribourg (CH). As owner of Koopmans Consulting GmbH, located in Zürich, Switzerland, he provides consultancy support for setting-up networks of experts, supporting start-up companies, identifying and writing project proposals for governmental funding schemes, and teaching tailored and interactive seminars on all aspects related to the plastics industry. As a former R&D Fellow at The Dow Chemical Company he brings more than 35 years of experience in the plastics industry. As a PhD graduate in Physical & Macromolecular Chemistry and Master in Business Administration he combines deep technical knowledge with business metrics to identify evolutionary and disruptive product developments. He holds a visiting professorship at ETH Zürich (CH) where he also received the Staudinger-Dürer Medal for excellence in Materials Science.

He has published more than 70 papers in international journals, contributed several book chapters, wrote two books, presented multiple keynotes at international conferences, and is holder of 21 patents.

