2015 Hans and Marlies Zimmer International Scholar Program

Yoan Simon, Adolphe Merkle Institute
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The 2015 Zimmer International Scholar is Yoan Simon, Adolphe Merkle Institute, University of Fribourg, Switzerland. Yoan was born in 1981 in Montpellier, France. He holds a Diplôme d'Ingénieur from the Ecole Nationale Supérieure de Chimie de Montpellier, where he studied materials chemistry. After multiple stays abroad, including Spain and Italy, Yoan joined the doctoral school at the University of Massachusetts, Amherst, working in the Polymer Science and Engineering Department under the mentorship of Prof. E. Bryan Coughlin. There, he worked on hybrid organic-inorganic materials, i.e. the incorporation of well-defined boron clusters into polymeric matrices. Graduating in 2008, Yoan was awarded the prestigious ETH fellowship to carry postdoctoral research at the Swiss Federal Institute of Technology in Zürich (ETH Zürich, Switzerland) working on two-dimensional polymers with Prof. A. Dieter Schlüter. For the past 5 years, he has been holding a junior faculty position at the Adolphe Merkle Institute at the University of Fribourg, where he leads a group that focuses on smart materials. The Simon lab has been involved in developing a variety of topics that revolve around the control of materials architecture to transduce a given energy into a useful response. By combining chemistry and engineering, Yoan's group aims to control the architecture of materials to bestow unusual optical and mechanical properties upon them. This approach has been successful in a number of areas ranging from energy conversion to patterning to more fundamental polymer functionalization aspects. Yoan has been recognized with a number of awards and fellowships, including a Leonardo Fellowship and two Massachusetts Space Grant Consortium Awards.

"Polymers: lightening up the mood"

For most people, polymers are indissociable from plastics. They are the main constituents of their grocery bags, milk bottles or lunch boxes. In most cases, polymers are just there as a structural material (e.g. a container, a rubber or a foam) or a coating (e.g. paint, varnish). In a world that has been revolutionized by macromolecular chemistry, it is easy to anticipate how the next generation of polymeric materials should further enhance our daily lives by providing unprecedented functionalities. This statement entails the creation of materials capable of adapting to their environment and responding in a predefined manner to a given cue. In this presentation, the evolution of polymer science over the years will be briefly broached and the move from passive towards responsive architectures highlighted. In particular, some of the uses of light as both an input and an output in adaptive polymeric materials will be covered. The potential applications of such systems in biology or energy-related applications will be discussed.