

MSE-Colloquium@NTU

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The Assembly of Amphiphilic Polymers in Water: Can Weak Forces Oppose Amphiphilic Segregation?

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Abstract

In selective solvents, diblock copolymers (BCPs) tend to self-assemble into core-corona structures above a critical micellar concentration. The core of the BCP micelle is formed by assembled solvophobic blocks, while the soluble blocks in the corona provide colloidal stability to the micelle. When a solvent-selective BCP comprises two *miscible blocks*, the attraction between the two blocks may overcome the solvent-driven block segregation. This situation will be discussed in the cases of aqueous dispersions of poly(2-isopropyl-2-oxazoline)-*b*-poly(lactide) and of azopyridine-modified poly(N-isopropylacrylamide)s, recently studied in this laboratory.

Biography

Dr F. M. Winnik is a renowned Nanosciences researcher having published over 300 scientific papers, books, chapters and patents on Water Soluble, Amphiphilic, Synthetic and Natural Polymers and their applications in Nanomedicine. Until 2018, she was a Professor in the Faculty of Pharmacy and the Department of Chemistry at the Université de Montréal in Canada. She recently took up professorship in the Department of Chemistry at the University of Helsinki in Finland. Dr Winnik is also a Principal Investigator at the International Centre for Materials Nanoarchitectonics at the National Institute for Materials Science in Tsukuba, Japan. She is born and educated in France where she earned a Diplôme d'Ingénieur Chimiste from the Ecole Nationale Supérieure de Chimie in Mulhouse. Dr Winnik obtained her PhD in Organic Chemistry and Photochemistry from the University of Toronto. Following her postdoctoral studies in Medical Genetics, she worked for 12 years as a Research Scientist at the Xerox Research Center of Canada. In 2014, she became Editor-in-Chief of the journal *Langmuir*, an interdisciplinary publication of the American Chemical Society. As a tribute to her contributions to chemistry, Dr Winnik was awarded the Clara Benson award and the Macromolecular Science and Engineering Award from The Chemical Institute of Canada. She is an elected member of the Academy of Science of the Royal Society of Canada and an international member of the Finnish Academy of Science.



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