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Background

- Since 2012** Associated Professor (MCF) IPREM / UPPA, UMR 5254.
Chemistry and Physical-Chemistry of Polymers.
- 2011 - 2012** Post-doctoral fellow - Soft Matter Synthesis Laboratory, Karlsruhe Institute of Technology (KIT, Germany) with Prof. Christopher Barner-Kowollik.
- 2007 - 2010** PhD in Chemistry and Physical-chemistry of Polymers at Polymers Colloids and Interface Laboratory (PCI-UMR 6120, now IMMM UMR 6283), Le Mans University. (Prof. Christophe Chassenieux / Dr. Olivier Colombani).
Self-assembly of amphiphilic diblock copolymers with tempered hydrophobic block in aqueous media: Towards stimuli-responsive dynamic aggregates.

Research Interests

My research activities focus on understanding the relationships between the chemical structure of amphiphilic block copolymers and their self-assembling properties in aqueous media. My main objective is to develop macromolecular nanostructures such as dynamic micelles, microgels and polymeric nanoparticles that are responsive under different stimuli (pH, salt and/or temperature). I use advanced macromolecular synthesis, based on controlled radical polymerization techniques (NMP, ATRP and RAFT) in order to finely control the chemical structure of polymers. Then, I implement a multi-scale experimental approach in order to characterize their physico-chemical properties using scattering techniques (light and neutrons). The obtained colloids find broad applications such as the detection of micropollutants in water, organic electronics, the release of active ingredients or the degradation of micro- and nanoplastics.

Key Words: Amphiphilic Block Copolymers, Self-assemblies, Colloids, Responsive System, Radical Controlled Polymerization, Light Scattering, Small Angle Neutron Scattering.

Publications and communication

18 peer-reviewed publications, 1 book chapter

17 oral communications (3 invited) in international and national conferences

Selection of Recent Publications

1. Review of Waterborne Organic Semiconductor Colloids for Organics Photovoltaics. A. Holmes, E. Deniau, C. Lartigau-Dagron, A. Bousquet, S. Chambon, N. P. Holmes **ACS Nano** (2021) 15, 3927–3959.
2. Molecularly Imprinted Polymer Colloids Synthesized by Miniemulsion Polymerization for Recognition and Separation of Nonylphenol. E. Decompte, V. Lobaz, M. Monperrus, E. Deniau, M. Save **ACS Applied Polymer Materials** (2020) 8, 3543–3556.
3. Versatile oligo(ethylene glycol)-based biocompatible microgels for loading/release of active bio(macro)molecules. G. Aguirre, E. Deniau, E. A. Khoukh, K. Chougrani, V. Alard, and L. Billon **Colloids Surf. B Biointerfaces** (2019) 175, 445
4. Interplay of thermo- and pH-sensitivity of amphiphilic block gradient copolymers of 2-(dimethylamino)ethyl acrylate and styrene. M. Rabyk, A. Destephen, A. Lapp, S. King, L. Billon, M. Hruby, O. Borisov, S. Stepanek, E. Deniau **Macromolecules** (2018), 51, 5219
5. Cationic thermoresponsive poly(N-vinylcaprolactam) microgels synthesized by surfactant free emulsion polymerization using a reactive cationic macroRAFT agent. L. Etchenausia, E. Deniau, A. Brûlet, J. Forcada and M. Save **Macromolecules** 2018, 51, 2551