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ICB PhD public presentations

CONTROLLED SELF-ASSEMBLY EMPLOYING MICROFLUIDIC TOOLS: PATHWAY SELECTION IN MATERIALS SYNTHESIS AND PROCESSING

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Co-examiners: Prof. Dr. Josep Puigmartí-Luis and Prof. Dr. Salvador Pané Vidal

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Meeting ID: 908 141 9262

Project Summary: Self-assembly is a crucial component in the bottom-up fabrication of hierarchical supramolecular structures and advanced functional materials. However, its control has been merely achieved via synthetic chemistry approaches, following rational molecular designs. My PhD research focuses on controlling self-assembly processes via microfluidic technologies. We show that microfluidic devices can allow an advanced spatiotemporal command of reagents; a feature that can strongly affect the outcome of a reaction. For example, we prove that the unique conditions present in microfluidic devices enable to unveil unprecedented synthetic pathways during the self-assembly of functional materials, favouring their controlled defect engineering and yielding new materials' properties. Additionally, we also prove that microfluidic tools can be used to control self-assembly process on surfaces, leading to a regioselective localization of multiple functionalities on a single surface.

CV. Semih received his BSc. and MSc. in Mechanical Engineering from Bogazici University, Turkey and joined deMello group in 2017 as a PhD student.