

Organic Materials

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Organic synthesis towards functional materials is at heart of the group, whose research focuses mainly on the chemical and plasma functionalization of carbon nanostructures for solar energy conversion, environmental and biomedical applications, the use of nanocellulose as a platform for bio-inspired functional materials and the preparation of functional supramolecular gels. We often use the microfluidics toolbox to study reactions or surface absorption kinetics, the controlled functionalization of nanosystems or the batch-to-flow transposition of active pharmaceutical ingredients of industrial interest. Main characterization techniques for organic synthesis and materials, including high-field and solid-state NMR, NIR absorption, TGA and DSC thermal analysis, AFM-STM at ambient conditions, benchtop flow reactors and cleanroom facilities are commonly accessed by the group components.

1. *Mild Microfluidic Approaches to Oxide Nanoparticles Synthesis*, Chem.Eur.J., **2022**, 28, e202103132
2. *Graphene-Based Scaffolds for Regenerative Medicine*, Nanomaterials, **2021**, 11, 404.
3. *Metal Cation Triggered Peptide Hydrogels and Their Application in Food Freshness Monitoring and Dye Adsorption*, Gels, **2021**, 7, 85
4. *Achieving selectivity in porphyrin bromination through a DoE-driven optimization under continuous flow conditions*, J. Flow Chem., **2021**, 11, 163-169.
5. *Comparative performance assessment of plasma reactors for the treatment of PFOA; reactor design, kinetics, mineralization and energy yield*. Chem. Eng. J., **2020**, 382, 123031.