

Air-sensitive photoredox catalysis performed under aerobic conditions in gel networks

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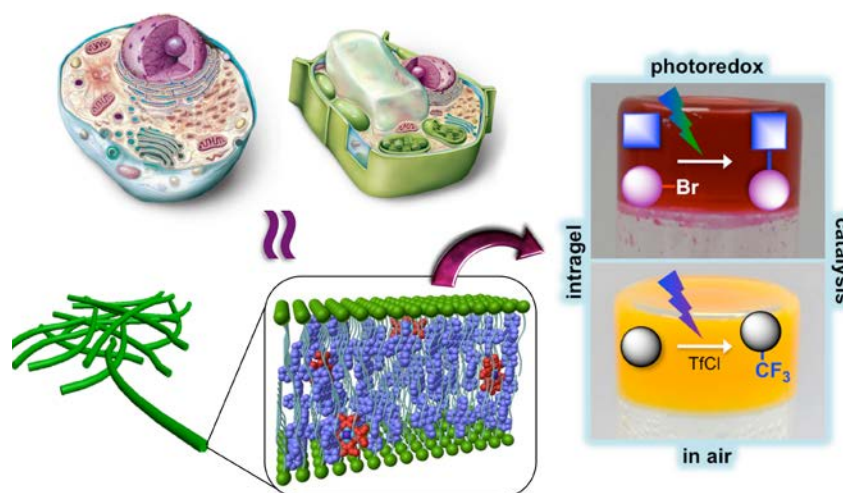
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Air-sensitive photoredox catalysis performed under aerobic conditions in gel networks

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Nature uses confined and compartmentalized environments such as organelles to carry out chemical reactions under mild conditions with a precise control on kinetics and selectivity. Over the last few decades, this has served as an inspiration to develop artificial nanoreactors based on directed self-assembly of small molecules through non-covalent interactions. Within this context, photochemistry can benefit from confined spaces, for example when performed in mesoporous inorganic materials, microemulsions, micelles, vesicles, polyelectrolyte multilayered capsules, liquid foams, and gels. The confinement may improve photochemical processes by influencing key aspects, such as light absorption and the lifetime of redox intermediates. In this talk, our recent advances on the use of supramolecular self-assembled gels as confined microenvironments for performing air-sensitive photochemical processes under aerobic conditions will be discussed. In some reactions the synergistic integration of donor-acceptor pairs in the gel nanofibers is reminiscent of the biological photon-harvesting apparatuses in which excitation light energy is effectively harvested and converted in the array of photosynthetic pigments embedded in biomembranes.



David DÍAZ DÍAZ received his PhD in Chemistry from the University of La Laguna under the supervision of Prof. Víctor Martín (Spain) (main topics: natural product synthesis and synthetic methodologies using transition metal complexes). In 2002, he joined Prof. Finn's group as postdoc at The Scripps Research Institute (CA, USA) (main topics: amidine chemistry, polymer synthesis and soft materials). Since 2006, he has held various positions in academia and industry ('Ramón y Cajal' Researchers, UAM, Spain, 2006; Sr. Chemist, Dow Chemical, Switzerland, 2007; Tenured Scientist, CSIC, Spain, 2009; Alexander von Humboldt Experienced Researcher, University of Regensburg, Germany, 2010). In 2013, he was awarded with the DFG Heisenberg Professorship, being the first Spanish scientist holding this distinction, and he was appointed as Associate Professor at the University of Regensburg. He has received the Young Investigator Award from the Polymer Network Group (Japan) and is the

Editor-in-Chief of the journal *Gels*. In 2017, he received an Honorary Adjunct Professorship from Jiangsu University (China) and the accreditation as Associate Professor by the ANECA agency from the Spanish Ministry of Education. His main research interest focused on the development of functional soft materials.