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GUEST EDITORIAL

Special Collection on the Occasion of the 10th Edition of the CARBOCAT Conference

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Progresses in sustainable catalytic transformations—a critical field for utilizing new feedstocks, creating high-performance materials, and establishing eco-friendly processes—rely increasingly on carbon materials and related technologies. For this reason, the development of carbon-based catalysts, along with advancements on the sophisticated toolkit of decarbonization and carbon circularity strategies, forms a cornerstone of sustainable development for the catalysis and material science community.

The importance of carbon in catalysis stems from its ability to generate diverse and flexible, multidimensional structures. Engineered into porous, zeolite-like networks, these carbons, frequently in the form of metal-free systems of lightweight hetero-doped networks, create specialized confined environments ideal for catalytic and energy applications. Sourcing these C-based materials from renewable feedstocks has finally allowed to directly connect technological innovation with sustainable carbon circularity. The development of hybrid composites—from metal nanoparticles to atomically dispersed single-atom catalysts—has further boosted the importance of C-based networks in catalysis. Today, carbon is acknowledged as an active promoter in thermal, electro-, photo-, and photo-electro-catalysis, surpassing its former identity as a passive, inert material/support.

Celebrating the 10th edition of the CARBOCAT conference (CARBOCAT 10, Florence, Italy, 24th–26th June, 2024), this special issue showcases the vibrant research of its global community. The featured papers not only demonstrate the field's energy but also affirm carbon's catalytic power in pushing the frontiers of nanoscience, characterization methodologies, and industrial innovation.

Showcasing diversity in carbon-based materials and their multiple applications, this *ChemCatChem* collection features original and review studies on nanoporous carbons (*Matos*, https://doi.org/10.1002/cctc.202500644), waste/biomass-derived carbons (*García-López*, https://doi.org/10.1002/cctc.202500189; *Acocella*, https://doi.org/10.1002/cctc.202500707; *Kozłowski*, https://doi.org/10.1002/cctc.202500143; *Saladino*, https://doi.org/10.1002/cctc.202402097 and https://doi.org/10.1002/cctc.202400974; *Ginoble-Pandoli*, https://doi.org/10.1002/cctc.202401042), carbon nanofibers (*Manzoli*, https://doi.org/10.1002/cctc.202500268 and *Bitter*, https://doi.org/10.1002/cctc.202500134), and their composites with metal nanoparticles or inorganic oxides (*Soares*, https://doi.org/10.1002/cctc.202500084; *Hermans*, https://doi.org/10.1002/cctc.202500070 *Tassinari*, https://doi.org/10.1002/cctc.202500931; *Luengnaruemitchai*, https://doi.org/10.1002/cctc.202500808 and *Gupta*, https://doi.org/10.1002/cctc.202401840). These materials found application in electrocatalytic, photocatalytic, and thermal processes for sustainable chemistry, including environmental remediation strategies, CO_2 conversion, and biomass valorization.

In light of the field's growing importance, the CARBOCAT 10 International Advisory Board (gathered in Florence, Italy) has unanimously designated Professors Fei Wei (Tsinghua University), De Chen (NTNU, Norway), Xiulian Pan (DICP, China), and Qiang Zhang (Tsinghua University) as chairpersons of the next CARBOCAT edition (CARBOCAT 11). Professor Yuefeng Liu (DICP, China) will serve as the Scientific Secretary. The conference will be held from 28th–31st May, 2026, at Tsinghua University in Beijing (China). The world-class stature of chairpersons and the host institution ensures that CARBOCAT 11 will be an event of extraordinary success like ours was.

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