Dép
des Sciences

JEUDIS DE LA SCIENCE - BIOMASS FOR APPLICATION IN ADSORPTION AND CATALYSIS

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Jeudi 11 septembre 2025 à 14 h 00
Amphi E, Bâtiment Descartes

The use of biomass-derived materials for adsorption and catalysis has emerged as a promising and increasingly relevant field of research, driven by the urgent need for sustainable, low-cost, and environmentally friendly alternatives to conventional synthetic materials. Biomass, particularly lignocellulosic feedstocks such as agricultural residues, forestry by-products, and agro-industrial waste, is abundant, renewable, and often

underused. These materials can be converted through various thermal, chemical, or biological processes into efficient adsorbents and/or catalysts. In adsorption, bio-based materials have shown significant potential for the removal of contaminants such as organic dyes, toxic metals, pharmaceuticals, and emerging pollutants from water. In catalysis, biomass-derived materials serve either as catalyst supports or active phases in a wide range of reactions, including biomass valorization, biodiesel production via transesterification, and degradation of environmental pollutants. Despite their great potential, there are still challenges related to reproducibility, scalability, material regeneration, and long-term stability. Despite these advances, challenges remain regarding material stability, regeneration, and large-scale production, which continue to be the focus of current research efforts.