

Biofuel Research Journal

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Aims and Scope

Biofuel Research Journal (BRJ) defines “*biofuel*” in both a *specific* and *generalized* context. In the specific sense, BRJ focuses on traditional biofuels and bioproducts derived from biomass. This includes biofuels such as biodiesel, bioethanol, biogas, and algal biofuels, as well as bioproducts like bio-based smart materials, biocomposites, and bio-based chemicals. In a generalized sense, BRJ extends the definition of “biofuel” to include any bio-based technologies, innovations, and strategies that contribute to reducing carbon emissions and fueling the transition toward a sustainable bioeconomy. Here, “biofuel” includes efforts that drive the shift from a carbon-intensive economy to a resilient, bio-based economy. Through this dual approach, BRJ aims to highlight the comprehensive role that both specific biofuels and generalized bio-based innovations play in fostering a sustainable future.

The journal welcomes original articles, review papers, case studies, short communications, and hypotheses on the following topics:

- Biofuels and Bioproducts:** Traditional biofuels such as biodiesel, bioethanol, biogas, algal biofuels, and emerging biofuel sources, as well as bioproducts like bio-based smart materials, biocomposites, and their applications in industries like food, pharmaceuticals, and others. These developments contribute to the traditional understanding of biofuels and bioproducts, and the broader bioeconomy.
- Innovative Bio-based Strategies:** Exploring innovative technologies and strategies that contribute to carbon reduction and sustainability, supporting the journal's broader definition of biofuel as a driver of the bioeconomy. These strategies are integral to BRJ's generalized definition of biofuels as enablers of the bioeconomy.
- Biomass Valorization:** Research into efficient biomass conversion methods, biorefineries, and bioprocesses aimed at maximizing energy output and value-added products, aligning with the shift toward a bio-based economy. This aligns with both specific biofuel production and broader efforts to transition to a bioeconomy.
- Biomass-Derived Materials for Energy and Storage Systems:** Developing biomass-derived materials for use in energy systems, including fuel cells, batteries, supercapacitors, and photovoltaics, contributing to sustainable energy solutions.
- Biomass-Derived Materials for Environmental Sustainability:** Investigating biomass-derived materials for carbon capture, pollution mitigation, and other environmental sustainability applications that mitigate climate change and promote circularity.
- Sustainable Applications in Food and Medicine:** Utilizing biomass-derived materials in sustainable packaging, functional food ingredients, drug delivery systems, tissue engineering, and regenerative medicine to support a circular bioeconomy. These applications contribute both to the bio-based economy and a circular economy.
- Catalytic Applications of Biomass-Derived Materials:** Advancing green manufacturing processes through biomass-derived catalysts and sustainable chemical transformations.
- Techno-Economic and Environmental Assessments:** Evaluating the techno-economic feasibility and sustainability of biofuels, bioproducts, and biomass-derived material pathways (life cycle assessment, exergy, energy, risk assessment), ensuring compliance with global sustainability standards. These analyses ensure the sustainability of bio-based innovations across different scales.
- Climate Change and Bioeconomy Integration:** Examining the role of biofuels and bio-based innovations in mitigating climate change and promoting the transition to a low-carbon bioeconomy. These innovations not only reduce greenhouse gas emissions but also align with global sustainability goals.
- Integrated Biofuel and Bioproduct Processing Systems:** Highlighting novel and integrated approaches to biofuel and bioproduct processing that optimize efficiency and resource use, key drivers for both specific biofuel production and the broader bioeconomy transition.
- Artificial Photosynthesis for Biofuel Production:** Exploring research on artificial photosynthesis as an emerging, sustainable pathway for biofuel production, reinforcing the journal's focus on next-generation bio-based energy solutions.
- Biofuels and Bioproducts in Developing Economies:** Encouraging the promotion and adoption of biofuels, bioproducts, and bio-based technologies in developing economies, contributing to local economic development, sustainability, and global climate mitigation.
- Circular Economy and Resource Efficiency:** Investigating the role of biofuels and bioproducts in circular economy frameworks, with an emphasis on resource efficiency, waste valorization, and sustainable biomass utilization as part of broader efforts to build a resilient bioeconomy.

BRJ supports interdisciplinary collaboration and invites contributions from researchers, policymakers, and industry leaders to accelerate the transition to a sustainable bioeconomy through innovative bio-based solutions. The journal is committed to maintaining the highest standards of peer review and editorial integrity, ensuring that only high-quality and impactful research is published. As an open-access journal, BRJ is completely free-of-charge, allowing unrestricted access to cutting-edge research for researchers, policymakers, and industry leaders alike.

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