XXI B-MRS Meeting

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October 1st to 5th

SBPMat B-MRS BRAZILIAN MATERIA RESEARCH SOCIET

Maceió-AL, Braz

October 1st to 5th, 2023

Booklet | Presentation Schedule | Mobile App

until ~~April 17th~~ May 1st	~~June 00th~~ June 25th	until ~~June 19th~~ June 29nd	~~June 26th~~ July 07th	until July 26th
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Welcome

The **Brazilian Materials Research Society (B-MRS)** and the
Committee of the XXI B-MRS Meeting invite the worldwide
community of materials research to attend the 2023 Meetir
be held at the Ruth Cardoso Cultural and Exhibition Center
Maceió-Alagoas, Brazil, October 1st to 5th, 2023.

This traditional forum is dedicated to recent advances and
perspectives in materials science and related technologies.
be an excellent opportunity to bring together scientists, eng
and students from academy and industry to discuss the sta
art of Materials Science discoveries and perspectives.

Maceió is one of the main Brazilian capitals that has receiv
tourists mainly due to the receptivity of its inhabitants, the
beaches with warm waters and extraordinary gastronomy. Y
very well welcome to Maceió. Do not miss this opportunity.

Organizing Committe

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Designing Hybrid Functional Aerogels for Environmental Applications

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The world today confronts numerous environmental challenges that require the creation of functional materials with exceptional (photo)catalytic activity and superior adsorption capacity. Inorganic nanomaterials exhibit excellent performance in removing contaminants and adsorbing metals due to their unique electronic and surface properties. However, using nanomaterials in particulate form for water treatment applications is impractical, considering the related economic, energy, and operational difficulties associated with material recovery [1]. In this presentation, we will discuss our recent studies [2,3] exploring bacterial nanocellulose-based aerogels as a porous, mechanically-stable and flexible support for inorganic nanostructures in order to design hybrid aerogel membranes for in-flow photo-assisted water treatment. Combining sol-gel, hydrothermal and supercritical drying techniques, we achieved controlled deposition of mesoporous metal sulphide/oxide layers on bacterial cellulose (BC) nanofibrils, thus obtaining lightweight hybrid organic-inorganic aerogel membranes. The prepared hybrid aerogels were employed in a specifically designed membrane photoreactor for the photo-assisted removal of organic and inorganic contaminants, such as dyes and heavy metals. Correlation between synthesis, material characterization, structural, and photocatalytic properties has yielded significant insights into designing functional materials for in-flow photocatalytic water purification. The optimized hybrid aerogel membranes exhibit promising performance for application in in-flow photo-assisted water treatment, representing a significant advancement in the use of free-standing aerogel membranes for photocatalytic applications in liquid media.

References

1-Ullah, S. et al *Photochem. Photobiol. Sci.*, 22, 219–240 (2023)
2-Ferreira-Neto, E.P. et al*ACS Appl. Mater. Interfaces*12, 41627–41643 (2020)
3- Ferreira-Neto, E.P. et al *ACS Appl. Mater. Interface*s, In press, (2023)