

XXI B-MRS Meeting

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Maceió-AL, Brazil

October 1st to 5th, 2023

- Booklet
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until April 17 th May 1 st	June 06 th June 25 th	until June 19 th June 29 nd	June 26 th July 07 th	until July 26 th
Submission of Abstracts	Abstract status notification	Submission of Revised Abstract	Final Abstract Notification	Submission for Student Awards

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Amount R\$ 70.00 - payment via PIX. The poster will be available at the Poster Help Desk at the Conference on Monday morning, October 2nd - 9am.

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Researchers from the State of São Paulo (BR) might be eligible for financial support from FAPESP. More information in the link below.

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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 Meeting to be held at the Ruth Cardoso Cultural and Exhibition Center in **Maceió-Alagoas, Brazil, October 1st to 5th, 2023.**

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

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

Organizing Committee



Carlos Jacinto da Silva
Chair

Institute of Physics,
Universidade Federal de Alagoas



Mário Roberto Meneghetti
Chair

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Biotechnology, Universidade
Federal de Alagoas

SYNTHESIS AND CHARACTERIZATION OF HYBRID FILMS BASED ON URETHANESIL MATRIX AND PHOTOACTIVE SILICA AEROGELS@ANATASE@PRUSSIAN BLUE NANOCOMPOSITE

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The field of photoactive device design has received significant attention in recent years due to its impact on technological advancements. One promising approach to enhance the performance of these systems is to prepare semiconductor oxide nanocomposites with metals or metal complexes. This can lead to improvements in (photo)catalytic activity, stability, solar energy conversion, and the addition of new properties. Core@shell nanocomposites are particularly interesting due to their ability to tune structural and electronic properties by modifying the composition and physicochemical properties of their core and shell components [1].

In this study, we explore the modification of titanium oxide-based photocatalysts with hexacyanometallate Ferric Ferrocyanide, also known as Prussian Blue (PB). Titania-silica aerogels decorated with PB (ae-SiO₂@TiO₂@PB) were synthed combining sol-gel and photodeposition methods techniques. We studied the photochromic properties of titania silica aerogel decorated with PB dispersed on thin films based on hydroxiurethane/polydimethylsiloxane (PDMS) urethanesil type hybrid [2]. Prepared hybrid films show reversible photochromic behavior based on photo-induced reduction of PB layer by anatase nanocrystals under UV-light. Our results suggest that semiconductor@PB core@shell nanocomposites have promising potential for the design of photoactive devices in a variety of applications, including photochromic thin films, solar cells, and photocatalytic surfaces.

[1]Ferreira Neto, Elias Paiva et al. Prussian blue as a co-catalyst for enhanced Cr (VI) photocatalytic reduction promoted by titania-based nanoparticles and aerogels. New J. Chem.. , p. 10217-10231. abr. 2021

[2]Aguiar KR, Santos et al: Efficient green synthesis of bis(cyclic carbonate)poly(dimethylsiloxane) derivative using CO₂ addition:anovel precursorfor synthesis of urethanes. RSC Adv 2014, 4(46):24334.

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