

## XXI B-MRS Meeting

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# XXI B-MRS Meeting

October 1st to 5th



## Maceió-AL, Brazil

October 1<sup>st</sup> to 5<sup>th</sup>, 2023

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until April 17 <sup>th</sup> May 1 <sup>st</sup> Submission of Abstracts	June 06 <sup>th</sup> June 25 <sup>th</sup> Abstract status notification	until June 19 <sup>th</sup> June 29 <sup>nd</sup> Submission of Revised Abstract	June 26 <sup>th</sup> July 07 <sup>th</sup> Final Abstract Notification	until July 26 <sup>th</sup> Submission for Student Awards
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Before the conference: the file (in pdf format) should be sent by email until September, 28th to - [sinalizacaconexao@gmail.com](mailto:sinalizacaconexao@gmail.com)

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

### Request for resources from FAPESP

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 **Organizing 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 tourists mainly due to the receptivity of its inhabitants, the beaches with warm waters and extraordinary gastronomy. You are very well welcome to Maceió. Do not miss this opportunity.

## Organizing Committee



Carlos Jacinto da  
Silva  
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Institute of Physics,  
Universidade Federal de  
Alagoas



Mário Roberto  
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Institute of Chemistry and  
Biotecnology, Universidade  
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# 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-SiO<sub>2</sub>@TiO<sub>2</sub>@PB) were synthetized 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 CO<sub>2</sub> addition: a novel precursor for synthesis of urethanes. *RSC Adv* 2014, 4(46):24334.

Acknowledgments:CAPES and FAPESP