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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Contactless conductivity biosensor produced from Printed Circuit Board as durable device for detection of Covid-19 exposure

Larissa Meneghin Michilini[1,2], Elsa Materon[1,3], Laís Canniatti Brazaca[1,3], Emanuel Carrilho[1,3]

[1]Universidade de São Paulo, [2]Instituto de Química de São Carlos (*Departamento de Química e Física Molecular*) , [3]Instituto de Química de São Carlos

e-mail: lari.michilini@usp.br

The SARS-CoV-2 pandemic revealed the importance of exploring new low-cost materials for point-of-care devices. Given the relevance of the current scenario, the detection and quantification of antibodies can be used to assess the immune response to infection, the disease prevalence, determine a previous infection, as well as help evaluate the immune response to vaccination. Capacitively coupled contactless conductivity detection (C4D) is a promising methodology for these purposes because the reusable electrodes of the C4D sensors are not in contact with the measured fluid; the drawbacks of the polarization effect and electrochemical erosion can be avoided. Moreover, its quick response does not require complex and expensive electronic equipment. In this context, we developed a biosensor for quantifying IgG antibodies to SARS-CoV-2 using the C4D technique and constructed it from a printed circuit board (PCB) as a durable device. The production process used a PCB with a thin 30 µm thick copper layer and a 35 µm PDMS (polydimethylsiloxane) film as an insulating coating, doped with titanium dioxide to explore the variation of the dielectric constant of insulators in the signal gain of a C4D detector. The channels for sample retention were produced using transparent acrylic. Preliminary analyses using sodium chloride (NaCl) demonstrated that the device exhibited good reproducibility (CV ≤ 3.93%, n = 3) and repeatability (CV ≤ 0.40%, n = 10) and a detection limit of 0.34 mmol L-1. An analytical curve was constructed with six antibody concentration levels ranging from 0.05 to 3.30 µg mL-1 (n = 3). The proposed device demonstrated adequate analytical performance, showing a linear relationship between conductivity measurements and antibody concentration.