



ENCONTRO DE OUTONO **2021**
 SOCIEDADE BRASILEIRA DE FÍSICA
 21 a 25 de junho de 2021

21/06/2021 - Poster (17:00-18:00)

MEDICAL PHYSICS I

Chair: Rogério Matias



- P066 Evaluation of the bactericidal activity of silver nanoparticles in Staphylococcus aureus strains**
Aline Cristina de Lima, Thaís da Silva Veriato, Leandro Raniero, Maiara Lima Castilho
- P067 TREATMENT OF GLIOBLASTOMA MULTIFORME CELLS WITH TEMOZOLOMIDE ASSOCIATED WITH GOLD NANOPARTICLES**
Vitor Gabriel Poli de Lima, Vanessa Dias Gialucca, Viviane Paula dos Santos Jesus, Maiara Lima Castilho, Leandro Raniero
- P068 SYNERGISTIC ACTION OF GOLD NANOPARTICLES ASSOCIATED WITH TEMOZOLOMIDE IN GLIOBLASTOMA MULTIFORME CELLS: IN VITRO STUDY**
Vanessa Dias Gialucca, Vitor Gabriel Poli de Lima, Maiara Lima Castilho, Leandro Raniero
- P069 Langevin equation approach to diffusion magnetic resonance imaging**
Felipe P. Alves, Fernando F. Paiva
- P070 Coprime projections and the use of phase retrieval algorithms for tomographic reconstructions**
André Antonio Martins Chagas e Silva¹, Carlos Sato Baraldi Dias²
- P071 THERE IS NO DIFFERENCE ON THE VOLUMETRY OF THE AMYGDALO-HIPOCAMPAL COMPLEX OF SCHIZOPHRENIC PATIENTS**
Michelly C.S. Moreira, Ana Paula Morbio, Paulo R. Fonseca, Pamela R. Fonseca
- P072 IRRADIATOR WITH TEMPERATURE CONTROL AND MONITORING FOR THERMOLUMINESCENCE DOSIMETRY**
J. V. Fernandez, A. L. Lixandrão Filho, S. Guedes
- P073 Confocal Raman spectroscopy characterization of Nd:YAG laser irradiation on dental enamel for erosion prevention**
Pedro A. A. Castro (1), Daisa L. Pereira(1), Henrique B. Ribeiro(2), Christiano J. S. Matos(2), Denise M. Zezell(1).
- P074**
- P075 Tumor Control Probability: a comparative analysis between prostate cancer and glioblastoma**
Gustavo Moreira, Thatiane Alves Pianoschi, Mairon Marques dos Santos



Confocal Raman spectroscopy characterization of Nd:YAG laser irradiation on dental enamel for erosion prevention

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Confocal Raman spectroscopy is a non-destructive and non-invasive method used to obtain spectral features of biological structure and depth images without coming into contact with the sample. Biochemical content obtained by Raman microscopy is related to the characteristics of the tissues, allowing experimental use without any side effects to the sample. Complex biomolecular features can be resolved through confocal Raman imaging analysis with subcellular spatial resolution by using a single excitation wavelength laser to identify a large range of biomolecules. This work aims to characterize dental enamel irradiated by Nd:YAG laser and correlate the modified tissue in depth due to the heat propagation caused by laser absorption. For this, 30 blocks of bovine enamel were randomized into 3 groups: G1- enamel untreated; G2- enamel irradiated with Nd:YAG laser (1064 nm; 120 μ s pulsewidth, 10Hz; 84,9 mJ/cm²; Lares Research) using a squid Ink as photoabsorber; G3- enamel irradiated with Nd:YAG laser (1064 nm; 5 ns; 20 Hz; 1,05 J/cm² Brilliant, Quantel Laser) using a coal paste as photoabsorber. The phosphate intensity band was used as a spectral indicator of the groups characteristics. The Raman spectra of the Nd:YAG irradiated samples detected a phosphate intensity reduction in the G3 group after laser irradiation. There were distinct differences in the chemical activity after the laser irradiation and these findings, associated with the previous studies of our group, were related to the stability of the apatite, accompanied with the increased susceptibility to demineralization. The carbonate free apatite has been characterized as less likely to be affected by acid challenge. Based on our initial results, the thickness of the treated area is a critical variable in determining the resistance of erosion, especially for the type of photoabsorber associated with Nd:YAG. Our findings demonstrate the coal paste as a more resistant material to enamel erosion prevention. Therefore, fiber-optic confocal Raman imaging have shown potential to be an established spectroscopic choice for carie real-time monitoring.