

## *The use of mass spectrometry and spectroscopic techniques to study sulfur consisting biomolecules.*

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### *Abstract*

In recent years, there has been a large interest in the study of biological systems, namely, amino acids, peptides, and proteins, using synchrotron-based spectroscopic techniques, such as near-edge X-ray absorption fine structure (NEXAFS) or related X-ray photoelectron and X-ray emission spectroscopies. Most of the X-ray spectroscopic investigations of biologically relevant molecules, such as amino acids and their polymers, have been performed on thin organic films and liquids [1]. The association of mass spectrometry and spectroscopic techniques has allowed for the investigation of the effects of radiation damage in sulfur containing molecules. We have performed a NEXAFS (S1s) and mass spectrometry study of solid samples of cysteine, cystine and insulin irradiated with 0.8 keV electrons. The measured mass spectra point out to processes of desulfurization, deamination, decarbonylation and decarboxylation in the irradiated biomolecules [2]. In another study, inner-shell measurements of insulin were performed by coupling a linear ion trap mass spectrometer, equipped with an ESI source at the french synchrotron radiation facility SOLEIL. The electrosprayed insulin ions were injected, mass selected, stored in the trap, and irradiated during a well-defined period. The near-edge X-ray ion yield spectra of the 6+ charge state insulin precursor were recorded as a function of the photon energy, in the vicinity of the C1s edge.

### *Speaker Publications:*

1. "The use of mass spectrometry and spectroscopic techniques to study sulfur consisting biomolecular"; Journal of R&D. / 2020 / 8(8) / pp 2311-3278

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### *Biography:*

G Simões is a Professor at Instituto de Química, Universidade Federal do Rio de Janeiro, Brazil, she is doing research in absorption spectroscopy of inner layer; Photoelectron spectroscopy; Damage caused by ionizing radiation in biomolecules; Polymers and sulfur compounds.