



Contribution ID: 730

Type: **Poster**

Radiolysis of adenine in aqueous solutions and clay suspensions

Tuesday, May 15, 2018 6:30 PM (15 minutes)

The aim of this work is to establish if the presence of a solid surface, like a clay mineral, during the irradiation of adenine (purine bases) alter the stability, formation, and distribution of radiolytic products in comparison with samples of those molecules without the mineral. The results showed that these bases could receive higher irradiation doses with less decomposition to the samples without clay (recovery of 96-98.%). The irradiation was carried out in a 60-Cobalt-Gamma source with irradiation doses up to 91 kGy. These results can be applied to chemical evolution studies in which the preservation of organic compounds to energy sources may be important for the stability and formation of more complex prebiotic organic compounds.

The analysis of the irradiated samples was carried out by infrared spectroscopy, high-pressure liquid chromatography (HPLC) and HPLC-mass spectrometry.

This work was supported by CONACyT (grant No. C001-CONACyT-ANR-188689) and PAPIIT (grant No. IN226817). J.C. received support from a CONACyT fellowship and from the Posgrado en Ciencias Químicas. We thank Chem. Claudia Camargo, M.Sc. Benjamin Leal, and Phys. Francisco Flores for their technical assistance.

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Session Classification: Poster RCH

Track Classification: Radiation Chemistry