Paper ID: 20416
oral

SPACE LIFE SCIENCES SYMPOSIUM (A1)
Poster Session (P)

Author: Prof.Dr. BRIJ TEWARI
University of Guyana, Guyana

POSSIBLE ROLE OF SPACE AND EARLY EARTH BIOSPHERE IN CHEMICAL EVOLUTION AND ORIGINS OF LIFE

Abstract

Bernal 1951 was the first that suggested the role of minerals in the adsorption of key monomers from dilute solution and their further condensation to form biopolymers. The origin and spread of life in the universe is a long debated scientific and philosophical issue. Enough literature is available on the analysis of different types of meteorites to reveal in them the remnants of possible form of life. The First Scenario indicates that only life originates from endogenous sources on early earth. According to this scenario we know more about the reaction conditions on the primitive earth in comparison to other places where life may have originated. Therefore it will be assumed that life originated on primitive earth. The Second Scenario indicates that early life originate from exogenous sources in space and transported to early earth. Over 20 organic molecules including methane, ethane, ammonia, formaldehyde, acetaldehyde, acetonitrile are detected in dust of comets. The delivery of amino acids to the early earth by comets could have been a significant source of emergence of early life. The Third Scenario which is midway between first and second scenario indicates that part of early life is endogenous and part of it is exogenous in origin. But how much source of life is endogenous and how much source of life is exogenous is still a subject long debate. The adsorption of ortho – nitroaniline (ONA), meta-nitroaniline (MNA), para – nitroamlines (PNA) and aniline (A) on hectorite, kaolinite and nontronite has been studied at neutral pH (7.0 0.01) and a temperature of 30 1°C. The absorption data obtained at neutral pH followed Langmuir adsorption isotherm. The adsorption behaviours of substituted aniline follows the order ONA ¿ MNA ¿ PNA ¿ A. Kaolinite and nontronite showed maximum and minimum uptake capacity, respectively with all four (4) adsorbates studied. Present studies suggests the importance of clay minerals in the stabilization of biomolecules from degradation on primitive earth. This study supports the hypothesis of terrestrial origins of life. Detail will be presented.