

Photo-stability of nitrogen-bearing biomolecules under the Precambrian conditions

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Nitrogen (N) is a major component in critical biomolecules, such as amino acids, RNA, and DNA. Stability and accumulation of organic-N were pre-requisite for the origin and early evolution life. Here, we conducted photochemical experiments to investigate the stability of major N-bearing biomolecules under the ultraviolet radiation relevant with the Precambrian Earth. We also examined the effects of major seawater ions as well as minerals on the photo-stability of these species. Our preliminary results showed rapid photo-degradation of organic N and release of NH_4^+ , but the rate varied with the presence of cations and common minerals. By counting in major abiotic sources of these organic-N, we will examine the effect of photo-chemistry on the accumulation of these biomolecules in the prebiotic ocean and discuss viable pathways for the origin of life.