

Study of chemical evolution using synchrotron radiation (2)

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Based on the detection of amino acids from meteorites, we studied chemical evolution processes in universe where vacuum and low temperature are important characteristics. Using vacuum ultraviolet radiation, soft X-rays, and circularly polarized radiation available from the synchrotron radiation, we obtained experimental results as following:

(1)The 8 eV vacuum ultraviolet light or 530 eV soft X-ray triggered chemical evolution from glycine to glycyglycine, and that from glycyglycine to glycyglycyglycyglycine. We succeeded to determine absolute values of quantum efficiency.

(2)We succeeded for the first time to measure circular dichroism spectra of evaporated films of alanine and leucine at the wavelength region of 120 nm to 250 nm. At 120 nm, circular dichroism of alanine and leucine showed opposite sign each other.

Vacuum ultraviolet and soft X-ray radiation is very useful to study chemical evolution. I will discuss new opportunity to be opened by synchrotron radiation.