

## The stability of coronene and kerogen at high pressure and high temperature :candidates as organic matters in space

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PAHs, polycyclic aromatic hydrocarbon, are important candidates for organic compounds in space. They are very stable materials and can exist even in severe environments. Kerogen is also an important organic matter in the primitive materials such as carbonaceous chondrites. In this study experiments were carried out at high pressure and high temperature in order to investigate the stability of these organic matters. The autoclave and a clamp type diamond anvil cell were used for the high-pressure experiments. Samples of coronene and kerogen were compressed in these instruments, and the recovered samples were analyzed by a FTIR spectrometer. The present result used by the autoclave implies that the pure coronene decomposes above 420°C at 500bar, whereas it is stable in these conditions in the mixture with water. Kerogen decomposes above 250°C at 300bar in the conditions with and without water. The experiments were conducted by a clamp type diamond anvil cell for studying the stability of coronene. It was found that coronene is stable at 180°C and 2GPa. Further experiments for studying the stability of coronene and kerogen are now in progress. We will discuss the possible stability of the organic matters in the icy bodies based on the present experiments.