

The stability of PAH and kerogen at high pressure: implications for interior of icy bodies.

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It is important for understanding origin and evolution of planets to investigate a stable form of carbon in space and its reservoir. Now it has been proposed that following two organic compounds are as the candidates for the organic matters in space. One is coronene, C₂₄H₁₂, one of PAH (Polycyclic Aromatic Hydrocarbon), the other is kerogen. In this study measurements of IR spectra were carried out at high pressure and high temperature in order to investigate the stability of these organic matters.

It is found that coronene could exist stably up to 12GPa. As for kerogen, at the room temperature, it is stable for pressure up to 9GPa, but it seems to decompose easily at high temperatures above 250 °C. These organic matters can stably exist in icy bodies like Titan.