

Interfacial energy measurement of liquid Fe-S using X-ray tomography technique under high pressure

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Interfacial energy is one of the most important properties of molten Fe-alloy to control the core formation process in the Earth and planets. The aim of our study is to determine the effect of light elements on the interfacial tension of molten iron at high pressure and temperature. High pressure tomography technique is applicable to measure directly the interfacial energy between two liquids using the sessile drop method. Tomographic image can visualize the shape of the molten iron, which stays as a droplet in the molten silicate due to its high interfacial tension. From this sessile drop image, we can readily determine the interfacial energy between liquid Fe-alloy and molten silicate. Tomography images of Fe-FeS liquid with 3 different compositions were collected at 1GPa before and after heating the sample.