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高圧下における合金融体の音速と密度の関係
Relationship between sound velocity and density of liquid alloy under pressure

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It is important to understand the relationship between sound velocity and density of liquid Fe-alloys under high pressure for obtaining a constraint of the composition of the molten outer core from observed seismic data. We have studied a relationship between sound velocity and density of liquid alloy based on simultaneous measurement of these properties under high pressure and high temperature. Sound velocity was measured using ultrasonic pulse-echo overlapping method and density was measured employing X-ray absorption method combined with X-ray tomography technique. The measured P-wave velocity and density of liquid Ni?S both increase with pressure. From these data, adiabatic bulk modulus (K_{S0}) of the liquid sample can be well constrained to 29 GPa. It is note that the measured P-wave velocity is found to increase linearly with increasing density. This result provides an important issue in terms of Birch's law for liquid material.

キーワード: 音速, 密度, 液体, 高圧
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