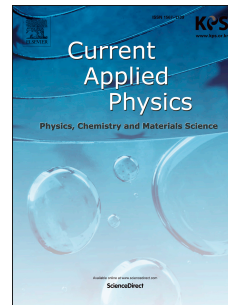


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# Hydrostaticity of Poly(methyl methacrylate) Loaded in a Diamond Anvil Cell for High-Pressure Study

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Hydrostaticity of poly(methyl methacrylate) (PMMA) loaded in a diamond anvil cell (DAC) was investigated up to ~10 GPa under two conditions, i.e., with and without pressure-transmitting medium. When PMMA was loaded in the DAC without methanol-ethanol mixture, one of the most widely-used pressure-transmitting media, hydrostatic pressure condition was not fulfilled having a pressure gradient. However, the Brillouin frequency shift of the longitudinal acoustic mode of PMMA exhibited nearly the same pressure dependence regardless of the loading condition whether it was loaded with or without the methanol-ethanol mixture. This suggests that the equation of state (pressure-density relationship) of PMMA, which is calculated by using the Brillouin frequency shift, can be obtained reliably without any pressure medium at pressures less than the solidification pressure of the liquid.

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