

Thermally-induced coloration of KBr at high pressure

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Alkali halides are widely used as pressure-transmitting media and as insulation for heating in laser-heated diamond anvil cell (LHDAC) experiments. Electronic changes in laser-heated KBr at pressures of 12-81 GPa cause runaway heating to temperatures in excess of 8000 K. We interpret the drastic changes in absorption behavior of KBr as rapid formation of high-pressure F-center defects near melting. This electronic transition is not accompanied by a structural phase transformation, and defects are annealed on decompression to room pressure. The results have significant consequences for temperature measurements in LHDAC experiments and extend the known existence of F-centers in alkali halides to 81 GPa.

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