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Pressure-induced phase transitions in GeS under high pressures[1]

RANGA DIAS, Institute for Shock Physics, Department of Physics, Washington State University, Pullman, Washington 99164, CHOONG-SHIK YOO, Institute for Shock Physics, Department of Chemistry, Washington State University, Pullman, Washington 99164 — We have studied the pressure-induced structural and electronic phase transitions of layered GeS (*Pnma*) to 30 GPa, using micro-Raman spectroscopy and electrical resistivity measurements in diamond anvil cells. The result shows a steady decrease in resistivity to that of metal at around 18 GPa. The visual appearance of GeS supports the insulator-metal transition: initially black GeS becomes opaque and eventually reflective with increasing pressure. The Raman result indicates that the metallization is preceded by a structural phase transition, presumably to the previously predicted *Cmcm* structure.

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