

Abstract Submitted
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Layered Structures Favor Superconductivity in Compressed Solid SiH₄¹ HAI-QING LIN, Chinese University of Hong Kong, XIAO-JIA CHEN, Carnegie Institute of Washington, JIANG-LONG WANG, Chinese University of Hong Kong, VIKTOR V. STRUZHUKIN, HO-KWANG MAO, Carnegie Institute of Washington — The electronic and lattice-dynamics properties of compressed solid SiH₄ have been calculated over the pressure regime up to 300 GPa with density functional theory. We find that the structures having layered network with eight-fold SiH₈ coordination favor the metallization and superconductivity. The layered *Cmca* SiH₄ is predicted to have a superconducting transition temperature of 75 K at 70 GPa thus opening new possibilities for exploring high temperature superconductivity in the hydrogen-rich system.

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