

Abstract Submitted
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Search for superconductivity in LiBC at high pressure¹ AMY LAZICKI, Lawrence Livermore National Laboratory, University of California, Davis, CHOONG-SHIK YOO, HYUNCHAE CYNN, WILLIAM J. EVANS, Lawrence Livermore National Laboratory, WARREN E. PICKETT, JUSTIN OLAMIT, KAI LIU, University of California, Davis, Y. OHISHI, SPring-8/JASRI, Hyogo 679-5198, Japan — Lithium borocarbide, which is a structural and electrical analog to high- T_c superconductor MgB_2 , remains insulating at ambient conditions due to atomic alternation in the crystal structure. We investigated experimentally and theoretically the properties of this material under pressure, including structural and bonding anisotropy and the possibility of metallization and superconductivity under high pressure. It is found to remain stable up to 60 GPa with no crystal structure change and without a previously reported lattice parameter anomaly. In this crystal structure, metallization is not predicted to occur until at least 345 GPa, at which pressure the electronic bands responsible for superconductivity in MgB_2 remain unoccupied in LiBC, ruling out the possibility of a new MgB_2 -like high pressure superconductor.

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