

Abstract Submitted
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Search for new superconductors in the La-Si-C system¹ JOSE DE LA VENTA, ALI C. BASARAN, University of California, San Diego, TED GRANT, ANTONIO JEFFERSON S. MACHADO, ZACHARY FISK, University of California, Irvine, IVAN K. SCHULLER, University of California, San Diego — We have searched for the presence of superconductivity in the La-Si-C system in bulk and thin film samples. This system has some of the common features that are present in high T_C superconducting materials. It is a multi-element compound and also incorporates a light element, Carbon. Furthermore, one of the binary phases, La_5Si_3 exhibits a tetragonal layered structure. This system exhibits the presence of a possible new superconducting compound with T_C 's ranging from 6.1 K to 8.5 K. In the binary La-Si system there are five inter-metallic phases. Among these phases, those that exhibit superconductivity are: LaSi_2 with T_C of 2.3 K, La_3Si_2 with a T_C of 2.1 K and La_5Si_3 with a T_C of 1.6 K. A careful analysis of several physical properties (SQUID, Modulated Microwave Absorption) and x-ray powder diffraction, (using Rietveld refinement) shows that superconductivity in this system could be ascribed to intermediate binary (La_2C_3) and single (La- β) phases of the system.

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