

Effect of doping on superconductivity in Mo_3Sb_7 from KKR-CPA study.

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Mo_3Sb_7 is a superconductor, with critical temperature $T_s \simeq 2.5$ K [1]. Recently, from the experimental study it was revealed, that the relatively low value of T_s may be a result of competition of spin fluctuations with superconductivity [2]. Moreover, from our electronic structure calculations it was found that the Fermi level is located on a slope of a large DOS peak, with the DOS value close to the Stoner limit on Mo atoms, which may be the reason for enhanced spin fluctuations. In this work the results of both experimental and theoretical study of various doping of Mo_3Sb_7 (e.g. with Ru, Fe) are presented. The evolution of the electronic structure and superconducting properties and the effect of spin fluctuations are discussed. The electron-phonon interactions in these alloys are studied using the rigid muffin tin approximation (RMTA) and KKR-CPA electronic structure calculations.

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[1] Z. Bukowski, D. Badurski, J. Stepien-Damm and R. Troc, Sol. St. Comm. **123**, 283 (2002).

[2] C. Candolfi, B. Lenoir, A. Dauscher, C. Bellouard, J. Hejtmanek, E. Santava, and J. Tobola, Phys. Rev. Lett. **99**, 037006 (2007).

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13.4 cm

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