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Superconductivity in the new ternary phase of the Ta-Hf-B system LUCAS EDUARDO CORREA, FREDERICO BENEDETTO SANTOS, CARLOS ANGELO NUNES, GILBERTO CARVALHO COELHO, SERGIO TUAN RENOSTO, Universidade de São Paulo - EEL/USP, ZACHARY FISK, University of California at Irvine - UCI, ANTONIO JEFFERSON DA SILVA MACHADO, Universidade de São Paulo - EEL/USP — In the Ta-B binary system the TaB phase crystallizes in the orthorhombic symmetry with CrB prototype structure which displays superconducting critical temperature close to 4.0 K. To our knowledge this binary phase (CrB prototype structure) is a just stable phase in all temperature range. In this work we will show that the substitution of Ta for Hf it is able to produce a allotropic transformation from CrB to FeB prototype structure. These results represent a new pseudo-ternary phase in the Ta – Hf –B system which is stable in high temperature. The phase found in this work present superconducting critical temperature close to 6.9 K which is sustained by specific heat, magnetization and resistivity measurements.

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