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Puzzling magnetic behavior of non-centrosymmetric superconductor Re_3W V. KUZNETSOVA, University of Tennessee, J.R. THOMPSON, University of Tennessee, ORNL, Y. ZUEV, D.K. CHRISTEN, R. JIN, ORNL — We have studied magnetic properties of non-centrosymmetric superconductor Re_3W . Unlike ordinary BCS superconductors, annealed samples of Re_3W exhibit linear Abrikosov-like dependence of the equilibrium (M_{eq}) and non-equilibrium (M) magnetization on magnetic field H in an anomalously large range $H \approx (0.1-1)H_{c2}$. This behavior is drastically different for the quenched (“as prepared”) samples of Re_3W . Equilibrium magnetization was obtained by “shaking” the flux line lattice with an alternating transverse field. $M_{eq}(H)$ curves show change in slope in about the same region of magnetic fields where the slopes of corresponding critical currents $J_c(H)$ also change. In our talk, we discuss probable causes of these effects. ORNL is managed by UT-Battelle, LLC for USDOE under contract DE-AC05-00OR22725.

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