Magnetic flux pinning properties of single-crystalline Li_2O doping $FeSe_{0.5}Te_{0.5}$

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The study investigated the chemical doping effect of Li_2O in the $FeSe_{0.5}Te_{0.5}$ single- crystal. The addition of Li_2O led to a decrease in the superconducting phase, resulting in reduced superconductivity in the $FeSe_{0.5}Te_{0.5}$ samples. X-ray diffraction (XRD), results indicated that the lattice constant of the *c*-axis initially decreased and then increased with increasing Li_2O content, suggesting that Li_2O may exist in $FeSe_{0.5}Te_{0.5}$ single-crystal in the forms of intercalation and substitution. Notabley, an increase in the *c*-axis lattice constant was observed in the sample with 5wt% Li_2O doping. The relationship between pinning force density and magnetic field, the F_p/F_{pmax}-$\mu_0 H$ curve revealed that only one peak of pinning force density was present in the sample, indicating that a single pinning mechanism dominated in the Li_2O doping $FeSe_{0.5}Te_{0.5}$.