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Superconducting properties of $FeSe_{0.5}Te_{0.5}$ and FeTe:O_x thin films
WEIDONG SI, Brookhaven National Laboratory, AYAN BHATTACHARYA, SU JUNG HAN, IVO DIMITROV, LIJUN WU, QIANG LI — High quality superconducting thin films of $FeSe_{0.5}Te_{0.5}$ and FeTe:O_x have been grown by pulsed laser deposition on various substrates including coated conductor. Thin films of $FeSe_{0.5}Te_{0.5}$ have a higher superonducting transition temperature Tc (onset start around 20K and zero resistance about 16 17K) than that of bulk. High resolution transmission electron microscopy has identified a microstructure only in thin films, which may be associated with the higher Tc. Magneto-transport measurement has been carried out to check the angular dependence of upper critical field Hc2 and the critical current density of the films with the direction of magnetic field. Both have shown a weak anisotropy. These films have a special high dHc2/dT at Tc, especially for FeTe:O_x film.

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