Abstract Submitted
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High Critical Field Superconductivity in FeSe0.1Te0.9 Coated Carbon Nanotubes HAIYAN WANG, post doc, NICHOLAS CORNELL, Professor, Texas A&M University, JIJIE HUANG, graduate student in TAMU, MYRON SALAMON, ANVAR ZAKHIDOV, Professor of Physics, University of Texas at Dallas, ANVAR ZAKHIDOV AND HAIYAN WANG TEAM, UTD AND TAMU AFOSR TEAM — Thin films of FeSe0.1Te0.9, grown on SrTi03, have been shown to possess an increased critical temperature, field, and current relative to both bulk samples of FeSe0.1Te0.9 and thin films of the related compound FeSe0.5Te0.5. Empirical measurement of FeSe0.1Te0.9 thin films reveal a zero temperature Hc2(0) $\sim$ 45T. Carbon nanotubes are a promising lightweight flexible material for superconducting applications and have proven a robust substrate when conformally coated by superconducting MgB2. Thin film coatings of FeSe0.1Te0.9 have been deposited via pulsed laser deposition on dry- drawn multiwall carbon nanotube sheets drawn from CVD grown forests. While true zero resistance isn't achieved due to inter-connectivity issues or junction effects in multiwall CNT case, clear superconducting transitions with R reaching zero can be seen on other single wall CNT, and non-oriented carbon nanotube substrates. Properties of these superconducting FeSe0.1Te0.9@SWCNT thin films are discussed.

Anvar Zakhidov
Professor of Physics, University of Texas at Dallas

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