

Abstract Submitted  
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**Impact of impurities on superconducting states of FeSe films on SrTiO<sub>3</sub>**<sup>1</sup> ZHUOZHI GE, DUSHYANT TOMER, SHIVANI RAJPUT, LIAN LI, Univ of Wisconsin, Milwaukee — Monolayer and bilayer FeSe films are grown on SrTiO<sub>3</sub> substrates by molecular beam epitaxy, and their surface atomic structure and electronic properties are studied using scanning tunneling microscopy/spectroscopy. Tunneling spectroscopy carried out at 6K reveals a superconducting gap of 20 meV for monolayer FeSe, while bilayer FeSe is found to be mostly semiconducting. However, a gap of 16 meV is observed within 1nm of impurity sites for the bilayer FeSe, indicating a superconducting state. This observation suggests that controlled doping can significantly change the electronic property of FeSe films on SrTiO<sub>3</sub>, which can even open a large superconducting gap. This research was supported by NSF DMR-1335215.

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