# Improving MBE $(Bi,Sb)_2(Te,Se)_3$ Topological Materials Via Resonant and Magnetic Dopants

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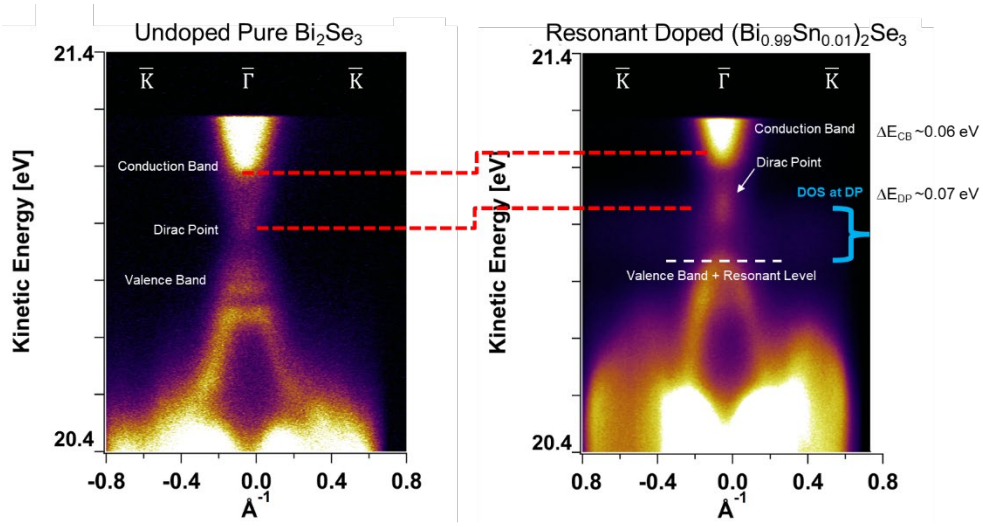



**Figure 1:** In-situ ARPES measurements from pure $Bi_2Se_3$ (left) and $Bi_2Se_3$ doped with resonant Sn (right) showing the behavior predicted by DFT calculations.

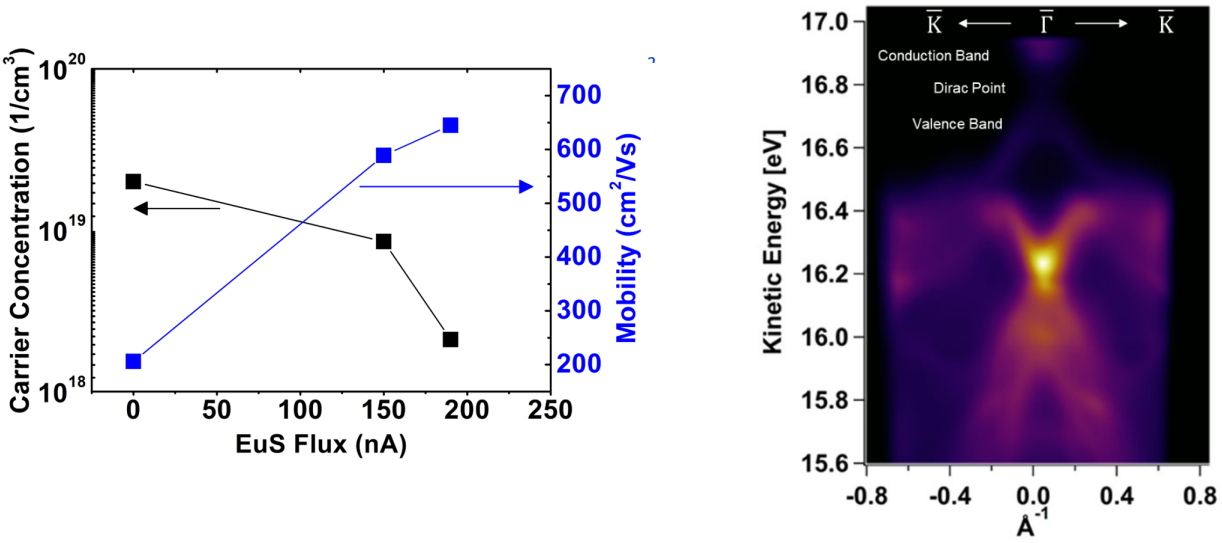
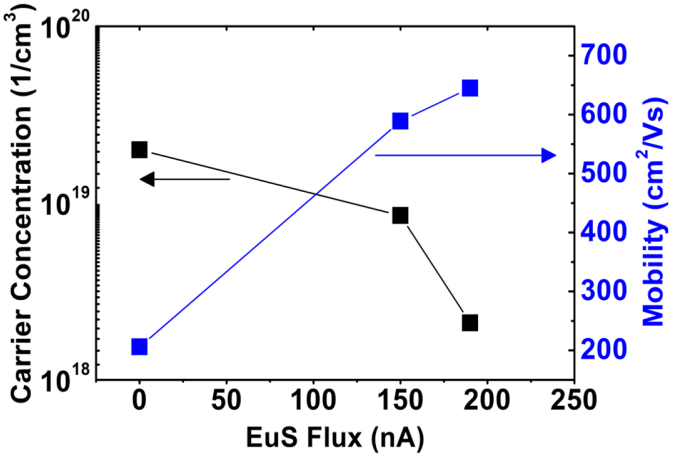



**Figure 2:** The improvement in transport properties of $(Bi,Sb)_2(Te,Se)_3$ doped with europium sulfide showing the desired reduction of bulk carriers (left), and near complete elimination of conduction band states with the Fermi level approaching the Dirac-like states.


Carrier Concentration (1/cm$^3$)
$10^{20}$
$10^{19}$
$10^{18}$
0
50
100
150
200
250
EuS Flux (nA)
700
600
500
400
300
200
Mobility (cm$^2$/Vs)