

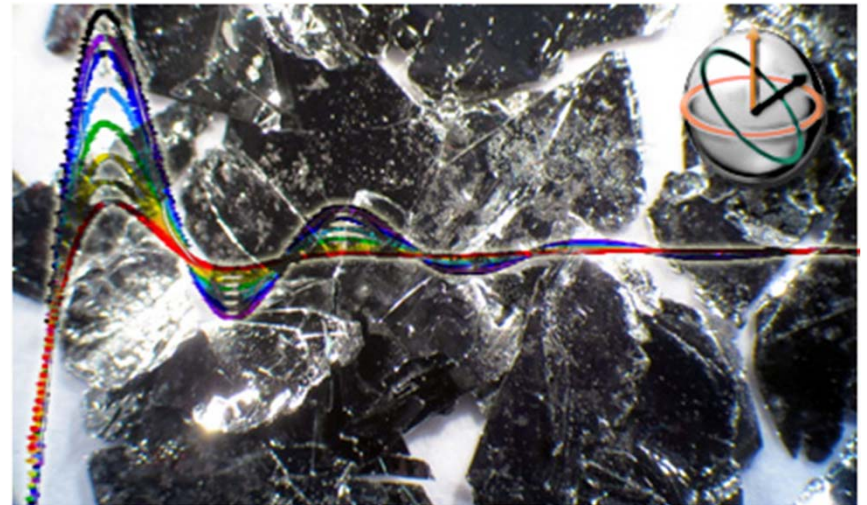
# Topological Materials for Next Generation Electronics

## Synthesis and Exploration of Topological Insulators (Seed 2)

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A new class of materials shows great promise for next generation electronics applications. *Topological insulators* have been heralded for unique properties that may prove crucial to the successful development of devices in the emerging fields of spintronics and quantum computing. Scientists are further excited about the prospect of investigating new and peculiar fundamental physics in these materials.

With the field still in relative infancy, the important first step is figuring out which materials work best. University of Maryland researchers have succeeded in fabricating the highest quality bismuth selenide and, in collaborations spanning several universities and a national laboratory, are working to demonstrate the device potential of this material. A large effort is also underway to identify new chemical compounds as candidate topological insulators.



These shiny flakes are crystals of the topological insulator bismuth selenide. University of Maryland researchers are engaged in crystal growth, and are exploring the electrical properties of these crystals to establish their applications potential. The colored curves show the electrical resistance in magnetic field, an important characteristic.