MS079.O03

Crystal growth of Topological insulators

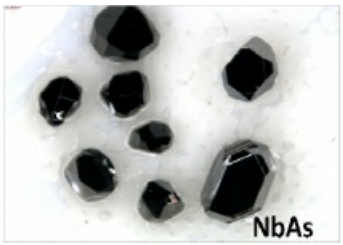
Dharmalingam Prabhakaran[1]
[1]*Department Of Physics, University Of Oxford, Oxford, United Kingdom*
E-mail: d.prabhakaran@physics.ox.ac.uk

Topological insulators (TI) have generated much interest, and have had critical acclaim in recent years. These exciting surface properties has inspired a search for new like-materials. They possess 2D Dirac fermions and distinct topology. There are several new compounds that have been predicted to be topological insulators both in the intermetallic and oxide families. To study the structural and electronic properties of the new materials, high quality single crystals are needed.

Several new Dirac semimetals, Heusler compounds (ABX) have been grown using a variety of crystal growth techniques, including: chemical vapour transport, flux and Bridgman techniques; some of the growth processes are very challenging due to their reactive natures. For example, Na3Bi will decompose instantly in air, hence extensive care has to be taken during the measurement.

In this talk, I will explain the crystal growth procedures for some of the recent TI materials and discuss its bulk properties.

1. Z. K. Liu, et.al., Science, 343, 864 (2014)
2. Z. K. Liu, et.al., Nature Materials, 13, 677 (2014)
3. A. Narayanan, et.al., Phys. Rev. Lett., 114, 117201 (2015)
4. L. X. Yang et.al Nature Physics, 11, 728 (2015)
5. Z. K. Liu et.al., Nature Materials, 15, 27 (2016)
6. Sandy Adhitia Ekahana, et.al., New Journal of Physics (accepted).



Keywords: Crystal growth, Topological Insulators