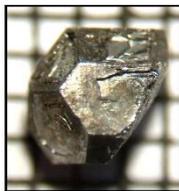


Crystal growth using flux method

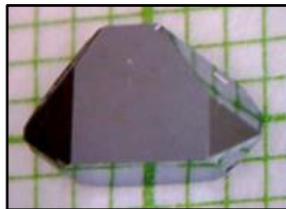
Supervisor: Dr Monika Gamza

High quality single crystals are essential for fundamental research and technological applications. Ultraclean samples of novel materials hold the key to scientific breakthroughs in the field of condensed matter physics. Furthermore, many materials of interest show anisotropic behaviour, either due to their crystal structure and interactions or as a consequence of the application of magnetic fields or pressure. The underlying physics of such systems can only be unravelled by investigations on high quality crystals. Therefore, single crystal growth is of strategic importance for the solid-state research.

During this project, you will grow crystals of novel materials showing unconventional superconducting and/or magnetic behaviour using state-of-art crystal growth facilities available in the Synthetic Solid State Physics lab at UCLAN. You will use Bruker D2 Phaser powder X-ray diffractometer and JCM-6000Plus scanning electron microscope to investigate crystal structures, microstructures, and chemical compositions of crystals grown from various fluxes. Detailed investigations of crystal structure by means of single crystal X-ray diffraction will be performed in the X-ray laboratory at the Lancaster University.



$\text{Ce}_3\text{Rh}_4\text{Sn}_{13}$



FeGa_3



YbCo_6Ge_6