MS19-03 | Crystal Growth Investigations of Lithium Iridate, Li_2IrO_3, and Lithium Ruthenates, Li_2RuO_3 and Li_3RuO_4

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Recently, lithium ruthenates,Li_2RuO_3 and Li_3RuO_4, and the Li_2IrO_3-modifications attracted considerable attention with exhibiting unconventional magnetism[1-3].

The structures of the three modifications of Li_2IrO_3 ((α-,β- and γ-Li_2IrO_3[4-6]) and Li_2RuO_3[7] consist of a honeycomb-like network,while the main structural components of Li_3RuO_4 are zigzag chains[8]. The need for high-quality single crystals for further investigations turns all compounds into subjects of crystal growth efforts, which are complemented by DTA and powder-XRD.

Single crystals are grown from the gaseous phase. A modified setup after [9] was realised, in which educts are separated by spacers with spikes, acting as preferred nucleation sites. The place of crystallisation depends on the position of the chemical equilibrium. Moreover, Li_2IrO_3-modifications show preferred growth conditions. For the first time, the applicability of this setup for the growth of Li_3RuO_4 is shown.

Currently, single crystals of α-Li_2IrO_3(1mm),β-Li_2IrO_3(0,5mm),Li_2RuO_3(0,6mm) and Li_3RuO_4(0,1mm) can be grown successfully.

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