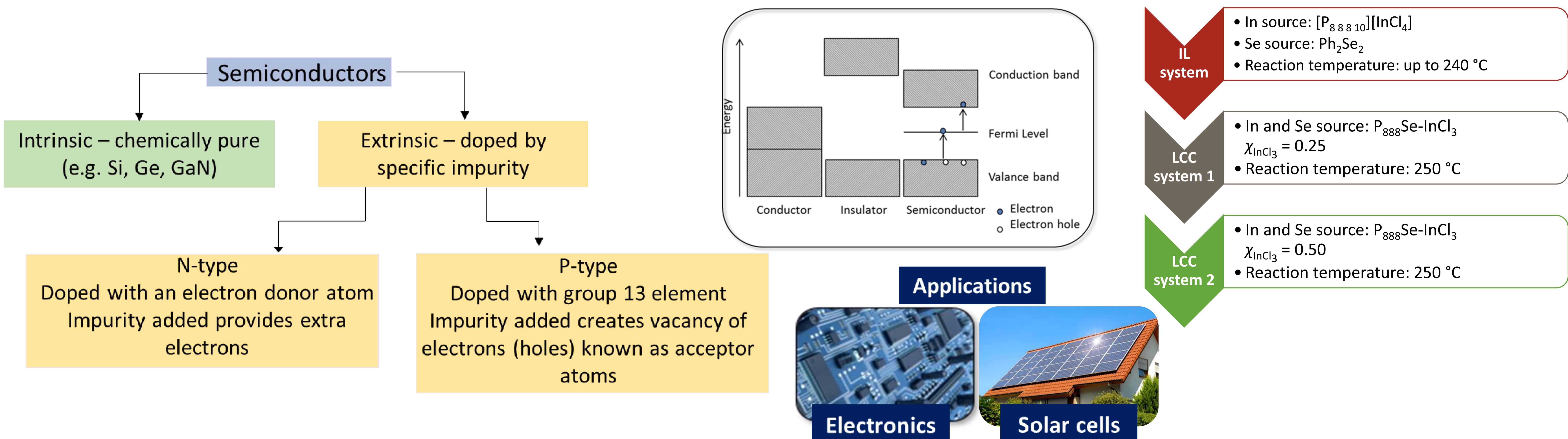




# Liquid coordination complexes (LCCs) for the synthesis of semiconductor nanoparticles

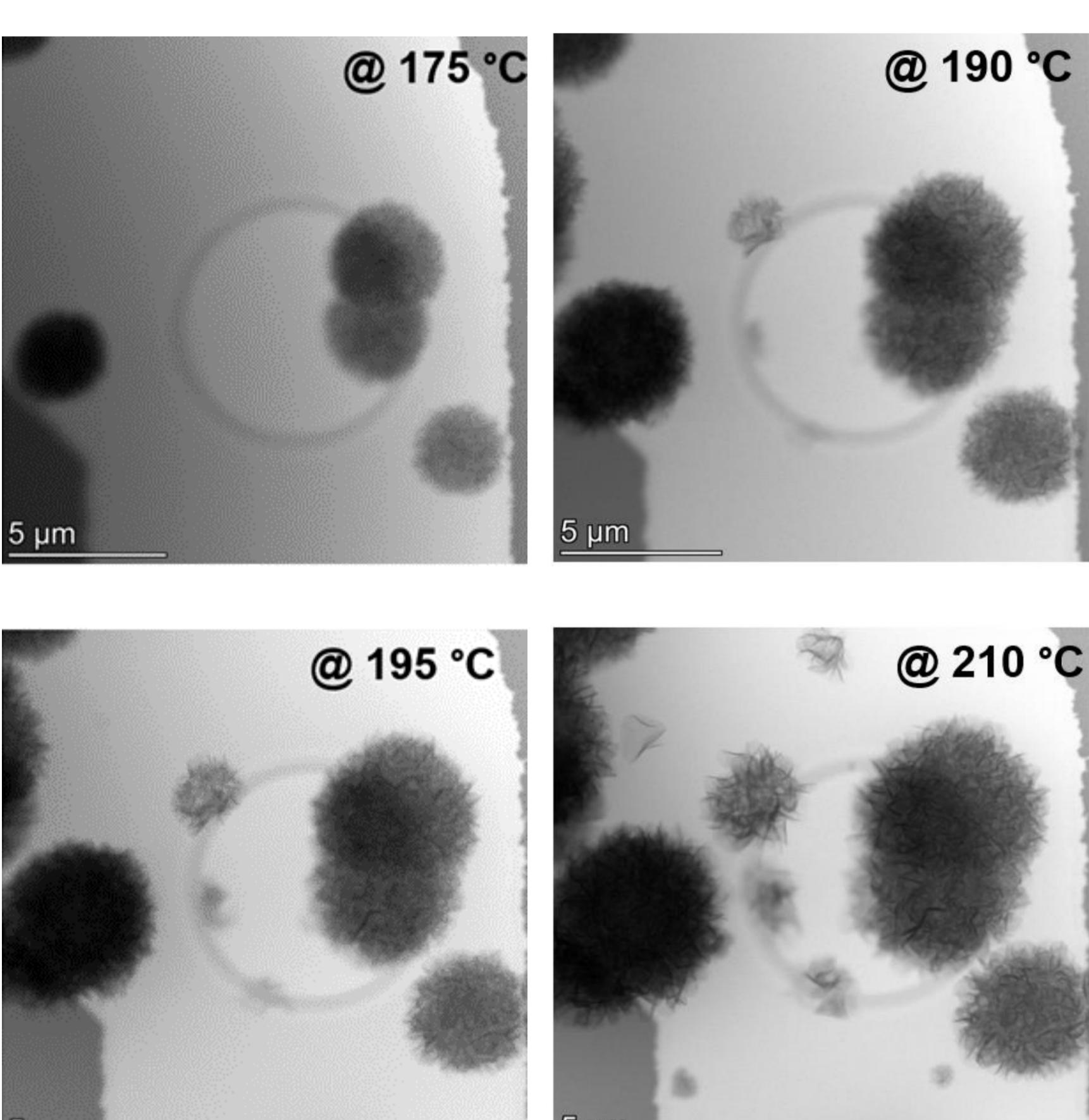
Beth Murray, John Scott, Nicholas Stephen, Miryam Arredondo and Małgorzata Swadźba-Kwaśny

## Semiconductor nanoparticles: Background and applications



## In operando TEM synthesis of indium(III) selenide nanoparticles from LCCs

### $In_2Se_3$ nanoparticles



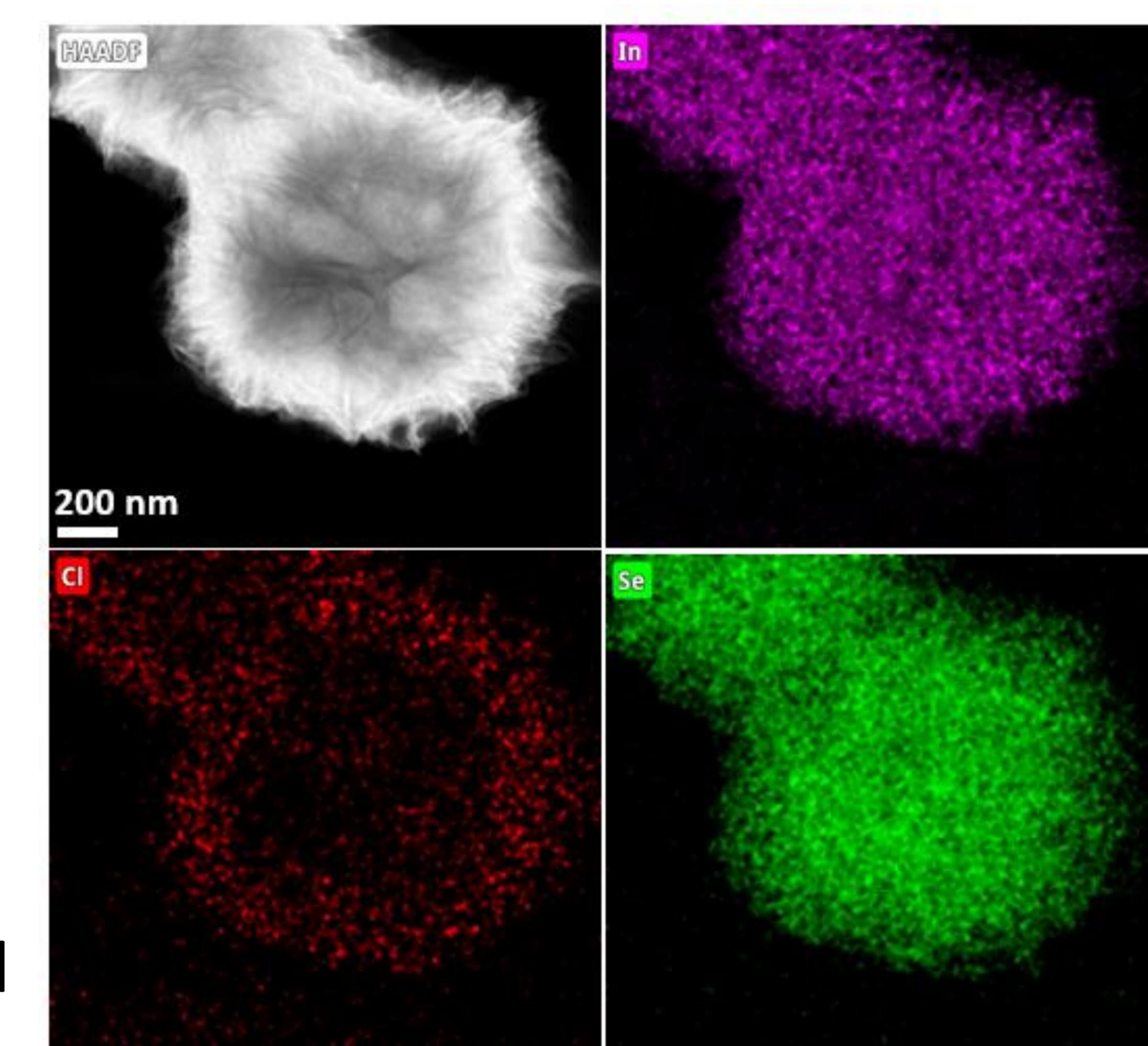
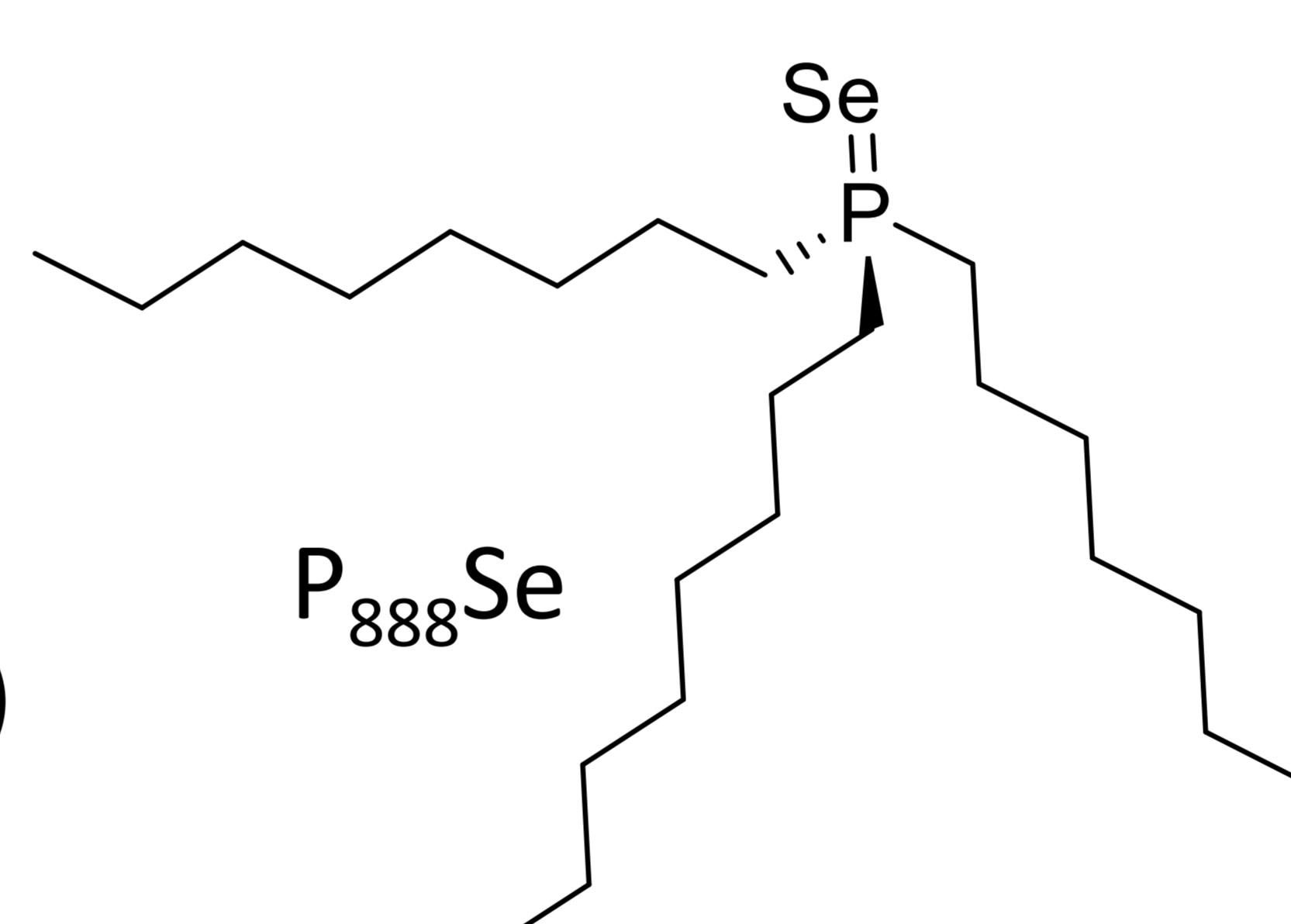
### TEM – 'transmission electron microscopy'

LCC:  $P_{888}Se-InCl_3 (\chi_{InCl_3} = 0.50)$

Ramped heating 2 °C/s

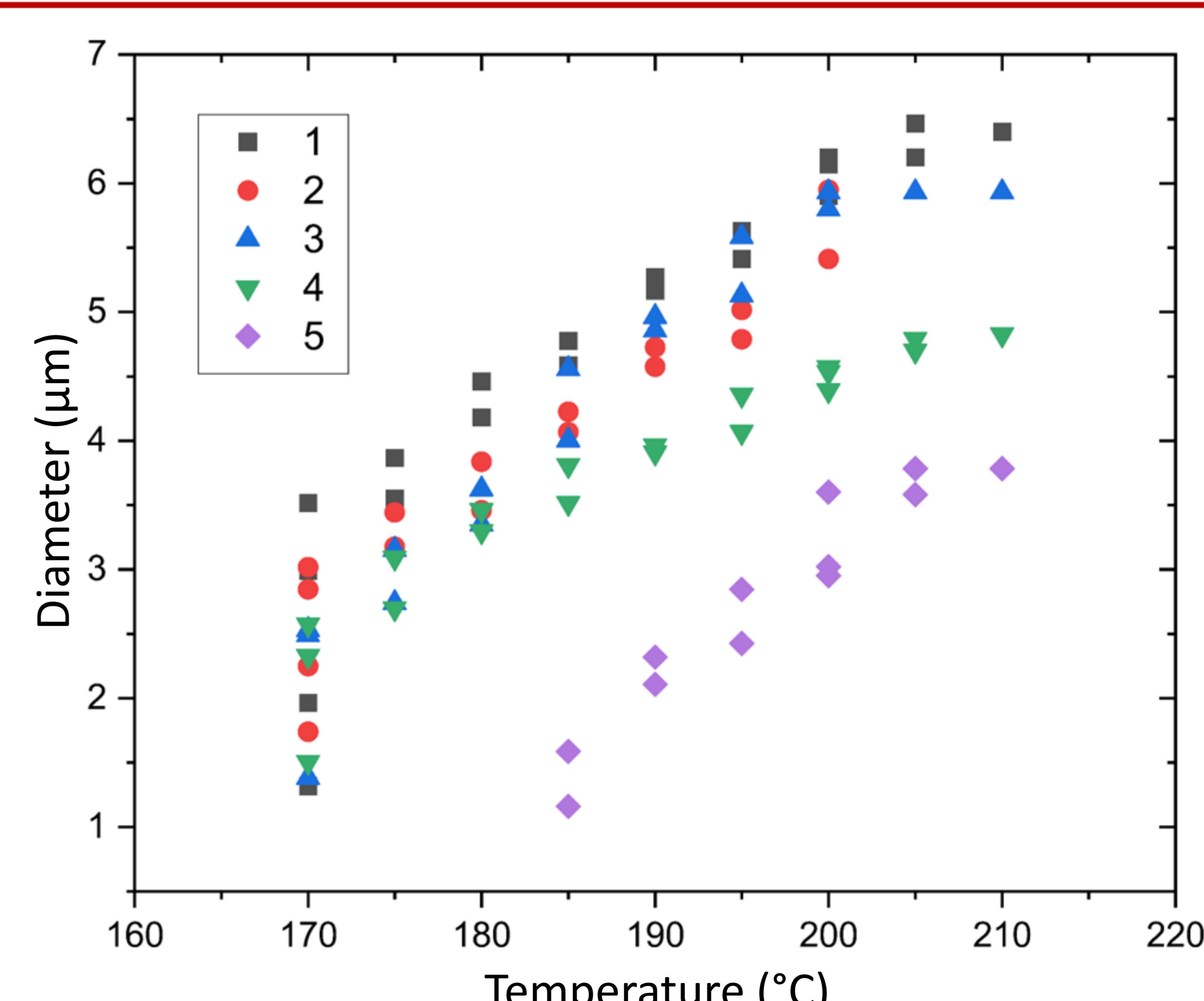
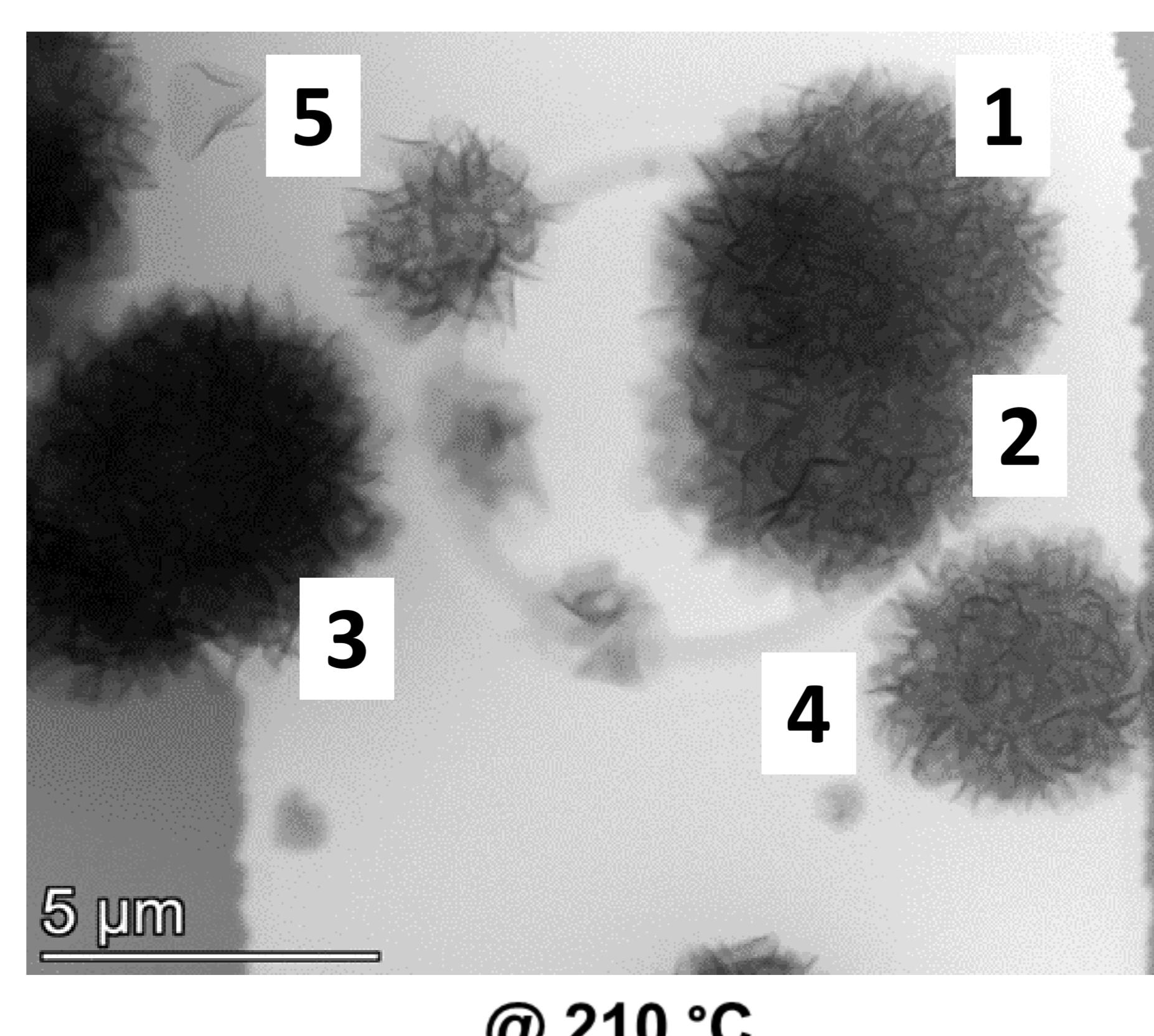
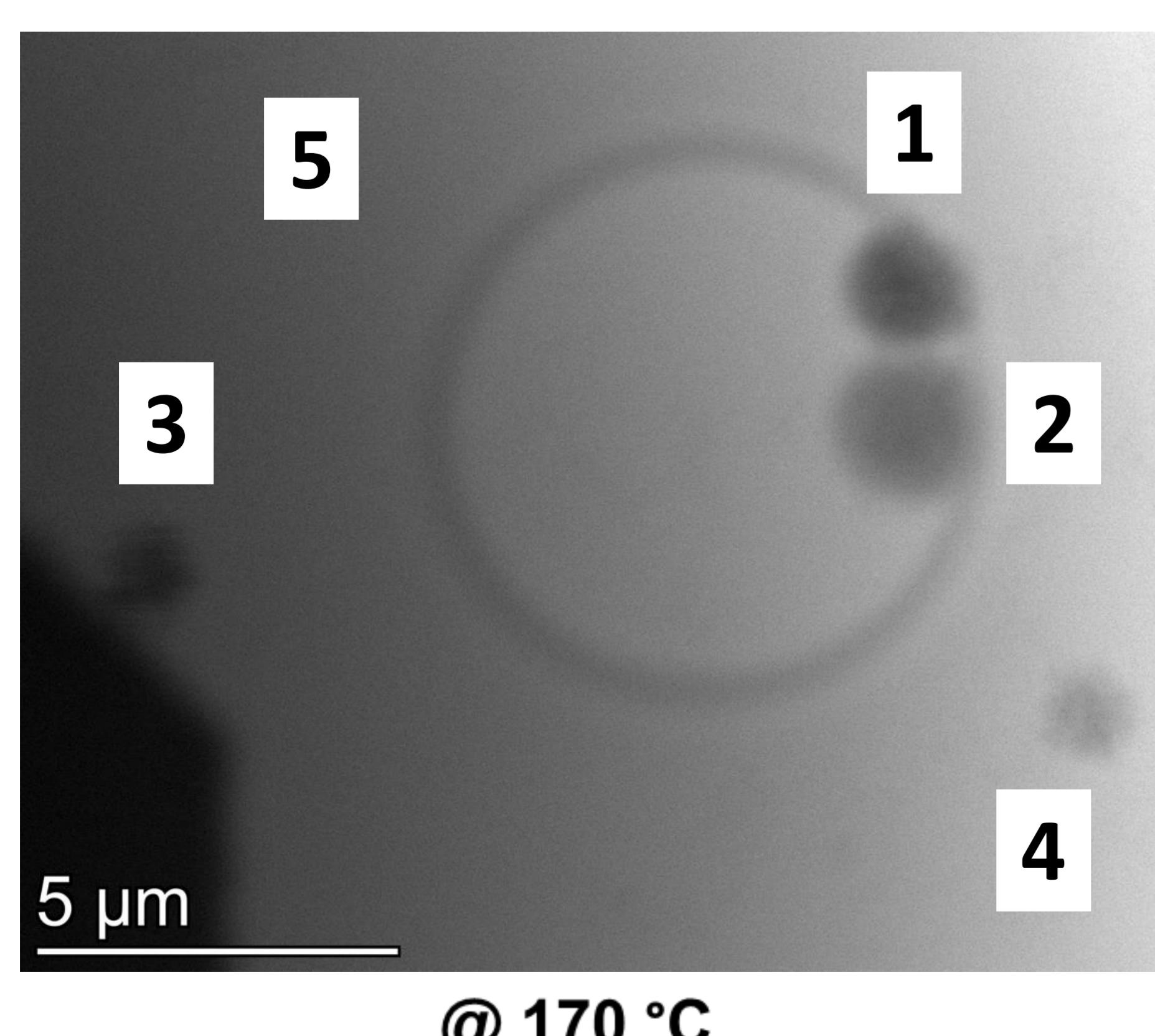
$In_2Se_3$ : N-type III-IV semiconductor

'Dandelion' morphology



EDX analysis confirms dandelion structures are primarily comprised of **indium** and **selenium**

## Kinetic study: Growth of nanoparticles as a function of temperature



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3. T. O. Peter Atkins, Jonathan Rourke, Mark Weller and Fraser Armstrong, *Shriver and Atkins' Inorganic Chemistry*, Oxford University Press, Great Britain, 2010.