Equipment Name: ZnO particle synthesis with shape control via Hydrothermal method	**Category: A. Particle Synthesis** **Institute: University of Leeds** **Location: Institute of Particle Science and Engineering, University of Leeds, LS2 9JT,UK** **Contact Details of Technology Expert:** **Name, Prof. Yulong Ding** **Phone, +44 (0)113 3432747** **E-mail y.ding@leeds.ac.uk**

Short technology description/Overview:

The hydrothermal method is carried out by dissolving ZnAc in methanol under stirring and by controlling the pH value of the reactants between 8 and 11 by adding NaOH (depending on the shape required). The solutions are transferred into Teflon lined sealed stainless steel autoclaves and maintained at various temperatures for various durations (1-5 days). Samples are then cooled to room temperature, washed with methanol and dried in air in a laboratory oven.

Advantages: Nanometer size can be obtained; the reaction is carried out under moderate conditions; the particle shape can be controlled by adjusting the reaction conditions.

Options for TA:

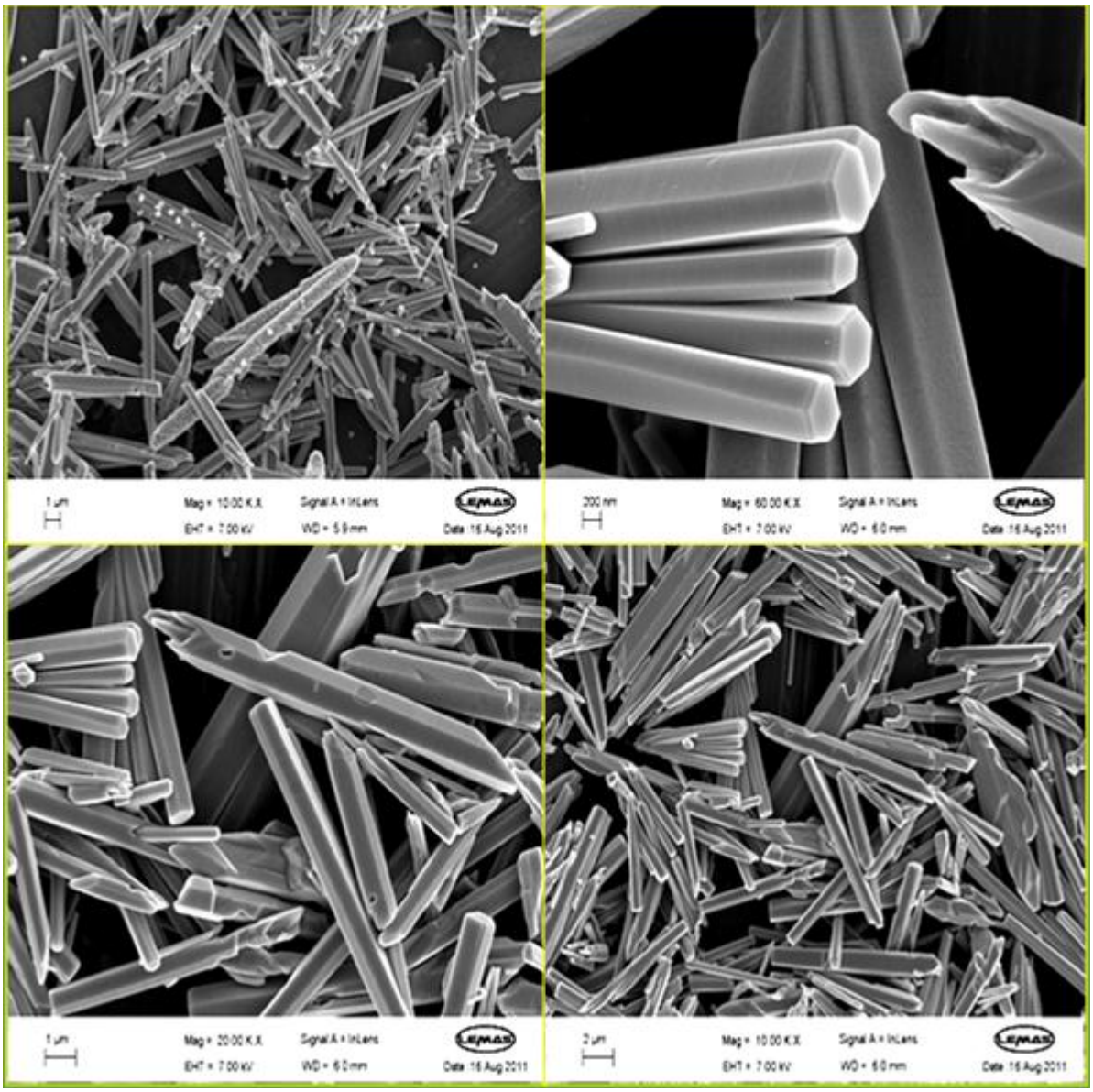
1. Users can request UNIVLEEDS to prepare ZnO nanorods or nanoneedles along with some characterisation (e.g. DLS and TEM)
2. Users can come to UNIVLEEDS to participate in / observe the synthesis, cleaning and preliminary characterisation (e.g. DLS and TEM) of ZnO nanorods or nanoneedles.

Main Features (Equipment Capabilities):

- Temperature range: 20 – 200 ^{o}C
- Particle size range: 100 nm – length: 500 nm - 10 µm
- Particle shape: needles or rods with several aspect ratios possible

Typical Samples & Images:

SEM images of ZnO nanorods and nanoneedles prepared by the hydrothermal method



Any further Information: