

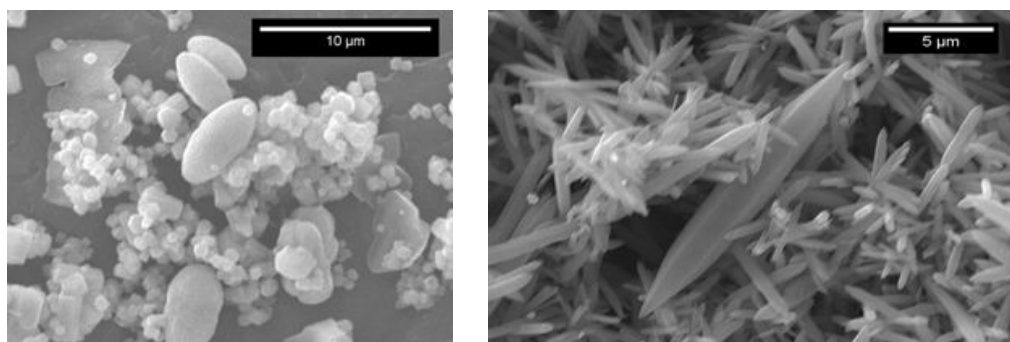
# Hydrothermal growth of ZnO (wurtzite like) nanocrystals. Surface quality enhancement due to the use of ZnCl<sub>2</sub> rich solutions – P39

Linda Pastero and Dino Aquilano

Dipartimento di Scienze della Terra, Università degli Studi di Torino

ZnO nanocrystals growing from amine rich aqueous solutions have been extensively studied in order to tune reactions rates and hence to control both crystal size and morphology<sup>[1,2]</sup>. At our best knowledge, it seems that nobody tried to change the Zn-donor. So, we maintained the usual amine content (as precursor) and used ZnCl<sub>2</sub> instead of Zn(NO<sub>3</sub>)<sub>2</sub>, as is usually done. Moreover, in order to avoid the influence of any substrate, our crystallizations were carried out by precipitation from the solution bulk.

Preliminary results allow to assess that micro- and nano-crystals growing from chloride rich solutions show a very smooth growth surfaces (both for {10.0} and {11.1} forms of the wurtzite-like phase), when compared to those obtained from NO<sub>3</sub><sup>-</sup> (nitrate) rich growth medium.



ZnO wurtzite-like nanocrystals: Figure 1 (left) From Zn(NO<sub>3</sub>)<sub>2</sub> rich solutions. Figure 2 (right) From ZnCl<sub>2</sub> rich solutions. The sole variable in the growth solution is the anion coming from the Zn<sup>++</sup> starting compound. pH values, time, temperature, Zn<sup>++</sup> and amine concentrations are the same in both cases.

## References

- 1.G. Du, L. Zhang, Y. Feng, Y. Xu, Y.X. Sun, B. Ding, Q. Wang Materials Letters (2012), 73, 86.
- 2.J.M. Downing, M. P. Ryan, M. A. McLachlan submitted to Crystal Growth & Design (2012).