

A vacuum methodology
for the fabrication of hybrid
core@shell (ONWs@ZnO)
nanowires

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In this communication we show the unprecedented fabrication of hybrid core@shell nanowires formed by an inner organic nanowire surrounded by a nanocrystalline ZnO layer. Single crystal organic nanowires made of small-molecules such as metal porphyrins, metal phthalocyanines and perylenes are fabricated by physical vapor deposition on organic and inorganic substrates with tailored microstructure [1, 2]. The conformal growth of the ZnO layer at low temperature allows the formation of the complex heterostructures keeping untouched the crystal structure of the organic part as demonstrated by HRTEM and SAED. As result, multifunctional hybrid core@shell architectures are fabricated on processable substrates. Examples of the ONWs@ZnO NWs as optical gas sensor and waveguides are presented.

References

- [1] A. Borrás, O. Groning, J. J. Koeble, P. Groening *Adv. Mater.* **21** (2010) 4816.
- [2] M. Alcaire, J. R. Sanchez-Valencia, F. J. Aparicio, Z. Saghi, J. C. Gonzalez-Gonzalez, A. Barranco, Y. Oulad, A. R. Gonzalez-Elipe, P. Midgley, J. P. Espinos, P. Groening and A. Borrás *Nanoscale* **3** (2011) 4554.