

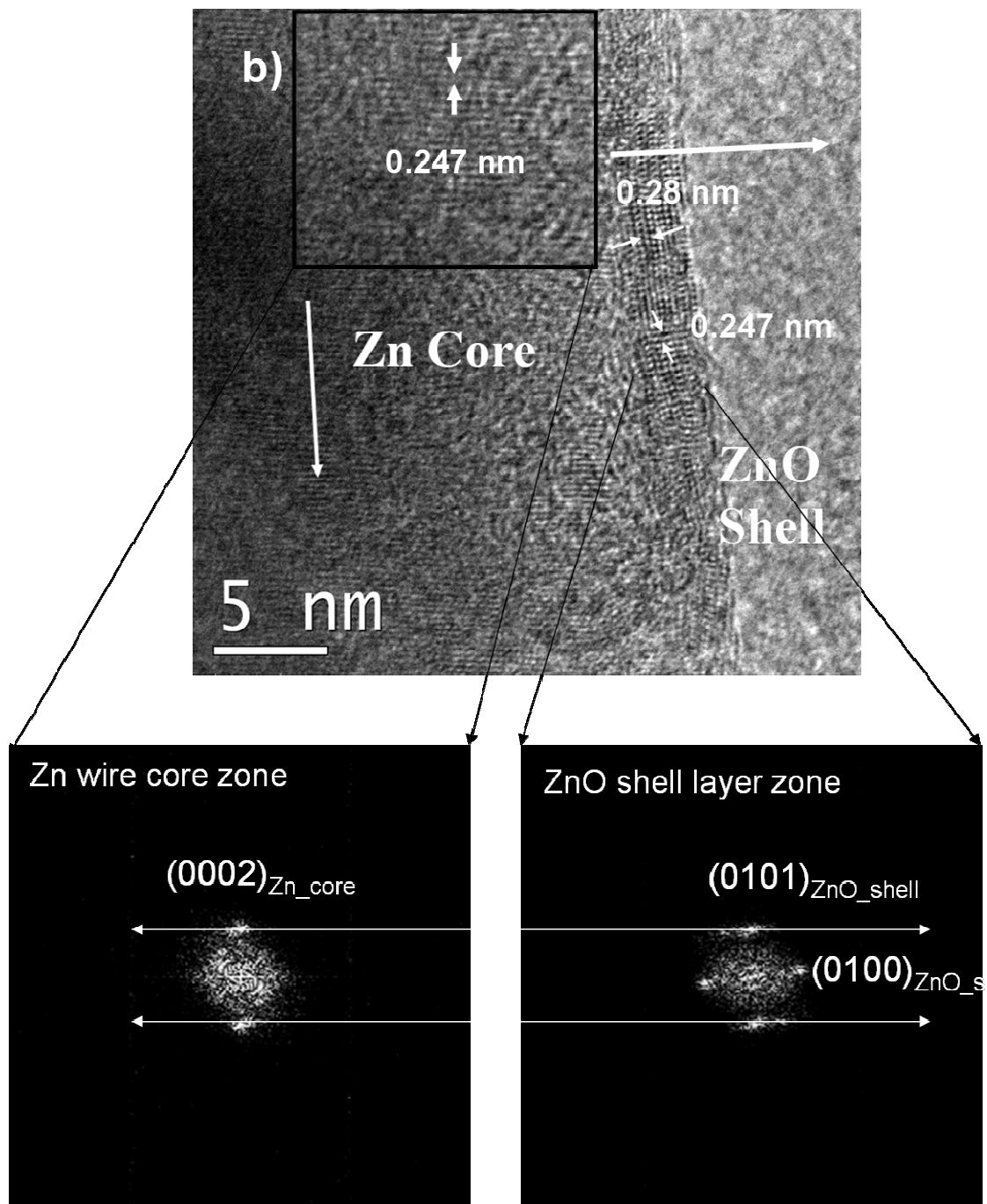
Supporting information

The analysis of the relation between the planes of Zn core rod and ZnO shell layer can be studied obtaining the FFT in both zones. In this case is clear that the lattice fringes observed in the HRTEM image corresponds to the (0002) reflection for metallic Zn wire ($d_{(0002)} = 0.247$ nm). On the other hand, the corresponding FFT in the ZnO shell layer zone shows two reflections, one of them corresponds to (0100) ZnO with a $d_{(0100)} = 0.281$ nm, the other corresponds to $d_{(0101)} = 0.247$ nm also for ZnO.

As it possible to observe, the lattice parameter 0.247 nm is sharing by both Zn metallic and ZnO structures but by different Miller indices. In ZnO wurtzite phase, the corresponding Miller index is (0101) for $d_{(0101)} = 0.24784$ nm while for metallic Zn rod, the corresponding Miller index is (0002) for $d_{(0002)} = 0.24735$ nm. The differences between both reflections are reflected in the hundredth angstrom significant digit, which is not detected by an electron microscopy measure analysis.

This has been indicated in the supporting figure using white arrows connecting both FFT images. The FFT images were obtained with a 256 X 256 pixels in the Zn core zone and ZnO shell layer.

The International centre of diffraction data (JCPDS) files were consulted for the lattice distance. Specifically, the charts consulted were 87-07713 for Zn and 89-1397 for ZnO.



Supporting figure. Fast Fourier Transform obtained from the HRTEM images. The size of the FFT images is 256 X 256 pixels.