

Tungsten oxide nanoparticles grown by inert and reactive gas condensation

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Tungsten trioxide (WO_3) nanoparticles find applications in gas sensors [1], smart windows and electrochromic displays [2-4]. WO_3 nanoparticles were obtained by two methods: 1) a WO_3 pellet was evaporated resistively from a tungsten boat in presence of helium at pressures from 100 to 1200 Pa. 2) a tungsten filament heated under nitrogen atmosphere was oxidized by an air flow. In both, TEM showed micrometric and nanometric particles with octahedric, rhombohedric and spheric morphologies (Fig. 1). The XRD and SAED patterns revealed cubic or monoclinic structure. No impurities were detected as shown in a XPS spectrum (Fig. 2).

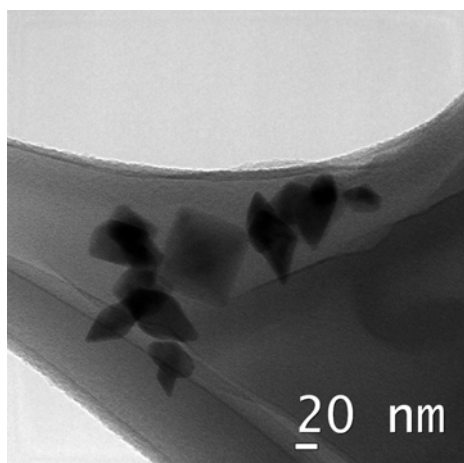


Figure 1: Bright field TEM image showing WO_3 particles with octahedric and rhombohedric morphology

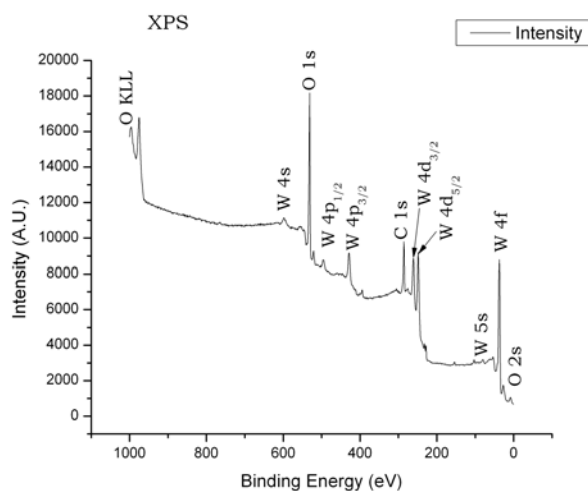


Figure 2: XPS spectrum of WO_3 powder revealing the high purity of the sample.

References

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