Supplementary Material (ESI) for Journal of Materials Chemistry

Polyaniline-Tungsten Oxide Metacomposites with Tunable Electronic Properties

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Supporting Materials

The crystalline structures of the NPs and NRs are determined by XRD. After running the XRD, the crystalline structure of both WO_3 NPs and WO_3 NRs are clearly identified. The XRD patterns of WO_3 NPs (Figure 1) match well to the monoclinic WO_3[1-5] and the strong intensity of the diffraction peaks indicate a highly crystalline structure. The diffraction peaks (2θ) at 23.1, 23.6, 24.4, 26.6, 28.9, 33.3, 34.2 and 36.2° are assigned to the (002), (020), (200), (120), (112), (022), (202) and (212) planes of the monoclinic WO_3, respectively. The XRD patterns of the WO_3 NRs are highly consistent with the other work, unorthodox structure.[6] However, it is worth noting that the XRD pattern of the WO_3 NRs (Figure S1) is quite unusual in comparison to the WO_3 NPs. Preferentially oriented nanorods with limited crystal faces satisfying the Bragg requirements might be a major contribution to this unorthodox distribution of the diffraction peaks.

The lattice elongation direction of the WO_3 nanorods is clearly identified from HRTEM and SAED characterizations in prior reported work which grows along the (0002) direction.[6]

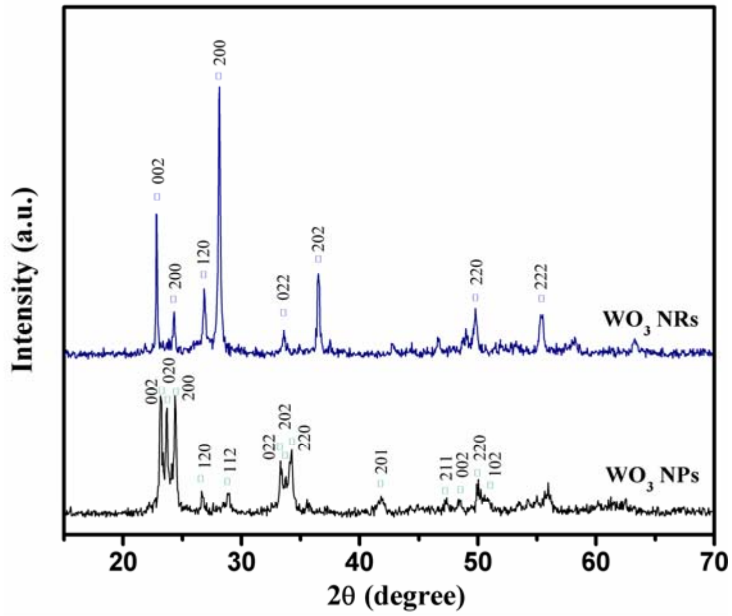

Figure S1 XRD patterns of WO_3 NPs and WO_3 NRs.

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