3-D TRANSMISSION ELECTRON MICROSCOPY RECONSTRUCTION OF A COMPLEX WO$_3$ GYROIDAL KIT-6 STRUCTURE

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ABSTRACT
In the last few years all leading research groups in materials science have been synthesizing a huge variety of nanoscale materials. These nanomaterials are meant to be used for future applications as functional materials; nanosensors; electronic, photonic or magnetic nanodevices or even nanomachines. The properties of these nanomaterials are the future, however some of these materials have complex 3-D structures that need to be visualized and analyzed, as a quality control of the synthesis process or just to understand their structure [1]. In this work we will have a look to the promising 3-D Transmission Electron Microscopy related techniques applied to materials science. To illustrate the technique we will show an example of 3-D reconstructed nanoscale material. In this context, we will show the TEM 3-D reconstruction of a WO$_3$ gyroidal KIT-6 structure and the posterior modeling of such a complex structure.

FIG. 1: (a) TEM bright field micrograph of the KIT-6 WO$_3$ structure. (b) Detail of a single WO$_3$ aggregate.

References