Xinjiang Cao et al., J Biosens Bioelectron 2014, 5:3
http://dx.doi.org/10.4172/2155-6210.S1.022

OMICS Group Conferences
Accelerating Scientific Discovery

3rd International Conference and Exhibition on
Biosensors & Bioelectronics
August 11-13, 2014 Hilton San Antonio Airport, San Antonio, USA

Large-scale synthesis of hierarchical-structured weissite (Cu_2-xTe) flake arrays and their catalytic properties

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Large-scale weissite (Cu_2-xTe) flake arrays with three-dimensional (3D) hierarchical structure have been successfully fabricated *via* a facile one-step solution-phase strategy through the reaction of tellurium powder and copper foam. At the end of the reaction Cu_2-xTe flakes were distributed evenly on the surface of a porous solid copper substrate. Field-emission scanning electron microscopy (FESEM) and transmission electron microscopy (TEM) analysis showed the abundance of flakes grown on the 3D porous copper architecture, while X-ray diffraction (XRD) and energy-dispersive X-ray spectra (EDS) were used to determine the crystal structure and phase composition of these products. A series of experiments discovered that the size and morphology of the products could be affected by some reactive parameters including the reaction time, synthesis temperature and volume ratio of absolute ethanol/deionized water. Catalysis experiments using the *in situ* synthesized of Cu_2-xTe flakes to catalyze the degradation of methylene blue (MB) demonstrated the strong catalytic ability of these flakes.

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