MS23-P4 The fabrication of ZnO microrods on monolayer graphene and their photocatalytic application

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ZnO microrods were fabricated on graphene/SiO_2/Si substrate by a simple hydrothermal method. The products were characterized using X-ray powder diffraction, scanning electron microscopy, energy dispersive x-ray spectrometry, photoluminescence and UV–visible spectrometry. ZnO microrods were exhibited hexagonal wurzite structure. Some ZnO clusters and twinned ZnO structures were spreaded on the microrod array layer. The formation mechanism of ZnO microrods was discussed, emphasizing the formation mechanism of ZnO clusters and twinned ZnO structures. Furthermore, ZnO nanorods demonstrated good photocatalytic performances and O vacancies and O interstitials were considered to be the active sites of the ZnO photocatalyst.

Keywords: ZnO microrods□Monolayer graphene□Photocatalytic application

MS23-P5 Progress in microstructure analysis by diffraction

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Most scientists still believe that Scherrer equation [1] and the Williamson-Hall plot [2] are the only tools available to extract microstructure data from any diffraction pattern. Terms such as “average crystallite size” and “microstrain” are common, but their true physical meaning is often ignored. The consequence is that qualitative results are often mistaken as fully quantitative ones.

In the past decades, a set of full pattern methods has been proposed to extract quantitative microstructure data from the diffraction patterns by considering physical modes for the material [3-5]. In this way, distributions (of size and shape) and defects can be quantified together with the more traditional structural data.

The recent advancements in the field are shown, leading to the possibility of extracting quantitative data from the diffraction pattern of materials that are no longer fully 3D periodic, extending down to the 2D periodic case.

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Keywords: nanostructured materials, XRD, Line Profile Analysis, defects, stacking faults, 2D materials