B-5

Morphological evolution of ZnO nanowires using varioussubstrates

J. P. Kar, S.N.DAS, J. H. Choi, J.M. Myoung†

연세대학교

(jmmyoung@yonsei.ac.kr†)

In recent years, ZnOnanostructures have drawn considerable attentions for the development offuturistic electronic devices due to their superior structural and opticalproperties. As the growth of ZnO nanowires by MOCVD is a bottom-up technique, the nature of substrates has a vital role for the dimension and alignment ofthe nanowires. However, in the pursuit of next generation ZnO basednanodevices, it would be highly preferred if well-ordered ZnO nanowires couldbe obtained on various substrates like sapphire, silicon, glass etc. Verticallyaligned nanowires were grown on A and C-plane sapphire substrates, whereasnanopencils were obtained on R-plane sapphire substrates. In addition, C-axisoriented vertical nanowires were also found using an interfacial layer(aluminum nitride film) on silicon substrates. On the other hand, longnanowires were found on Ga-doped ZnO film on glass substrates. Structural andoptical properties of the ZnO nanowires on various substrates were alsoinvestigated.

Keywords: ZnO, Nanowires, MOCVD, Morphology

B-6

A comparative study of grinding mill type on aluminiumpowders with carbon nano tube: traditional ball mill and planetary ball mill

최희규†, 최경필, 배대형, 이승백, 이웅, 김성수*

창원대학교 나노신소재공학부; *경상대학교 BK21친환경냉열에너지기계연구사업팀

(hkchoi99@changwon.ac.kr†)

Grinding characteristics foraluminium and carbon nanotubes (CNTs) powder during traditional and planetaryball milling investigated from the viewpoint of particle behaviour with the aimat developing CNT-dispersed samples ground based on powder metallurgy routes.In this work, a comparison between the pure aluminium and CNT input aluminiumgrinding was carried out to determine grinding time effect on size reduction.We observed that the use of the curly small-diameter multi-walled carbonnanotubes (MWCNTs) attributed to the beneficial role of the MWCNTs as grindingaids. It is suggested that careful choices of the sizes of CNTs and Al powderswould allow fine-grinding of composite particles with uniformly distributed CNTreinforcements thereby ensuring improved properties of the final compositesproduced by low-temperature compacting.

Keywords: aluminium, CNT, Planetaryball mill, grinding, mechanical alloying