

SPD공정을 이용한CNT/Cu복합분말의고형화**The consolidation of CNT/Cu powder mixture using severe plastic deformation processing**

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In this study, bottom-up type powder processing and top-down type SPD (severe plastic deformation) approaches were combined in order to achieve full density of 1 vol.% carbon nanotube (CNT)-metal matrix composites with superior mechanical properties by improved particle bonding and least grain growth, which were considered as a bottle neck of the bottom-up method using the conventional powder metallurgy of compaction and sintering. ECAP (equal channel angular pressing), the most promising method in SPD, was used for the CNT-Cu powder consolidation. The powder ECAP processing with 1, 2, 4 and 8 route C passes was conducted at room temperature. It was found by mechanical testing of the consolidated 1 vol.% CNT-Cu that high mechanical strength could be achieved effectively as a result of the Cu matrix strengthening and improved particle bonding during ECAP. The ECAP processing of powders is a viable method to achieve fully density CNT-Cu nanocomposites.