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**Fabrication of *in-situ* grown carbon nanotubes reinforced aluminum alloy matrix composite foams  
based on powder metallurgy method**

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**Abstract**

Uniformly dispersed carbon nanotubes (CNTs) reinforced aluminum (Al) alloy matrix composite foams were successfully fabricated by the combination of *in-situ* chemical vapor deposition and powder metallurgy using titanium hydride as a blowing agent. The effects of CNTs on the pore structure were systematically studied. The results showed that compared to the Al alloy foam, the introduction of CNTs could significantly improve the pore uniformity and reduce the pore size. As a result, the compressive property of composite foam had an obvious increase. The reasons for the enhanced pore structure mainly lie in that the CNTs increased nucleation sites for the decomposed hydrogen and limited the movements of bubbles in the melt during foaming process.

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