Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Growth of Carbon Nanotubes on Metallic Superalloys SAIKAT TALAPATRA, Southern Illinois University , SWASTIK KAR, SUNIL PAL, PETHURAJA GOPAL, LIJIE CI, ROBERT VAJTAI, PULICKEL AJAYAN, Rensselaer Polytechnic Institute — There are several advantages of growing carbon nanotubes (CNT) directly on bulk metallic substrates, for example in the formation of robust CNT-metal contacts during growth. Recently, we have shown that multiwall carbon nanotubes can be grown on Inconel 600, a super alloy, using vapor phase catalyst delivery. The single-step growth of high-quality aligned nanotubes (comparable to those grown on SiO_2 substrates) show encouraging electrical and mechanical properties. The in situ growth opens up a large number of possibilities for nanotube-based devices. Here, we present detailed investigations on the kinetics of the growth under various experimental conditions, and analyze the nanotube growth mechanism on the generic super alloy systems in the framework of our investigations.

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Date submitted: 29 Nov 2006 Electronic form version 1.4