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Study of CVD Growth Single-walled Carbon Nanotubes via Catalytic Layer Supported by Self-assembled Monolayer

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Bundles of single-walled carbon nanotube (SWCNTs) were grown using catalytic layer supported by self-assembled monolayers (SAMs). Amine-SAMs were introduced on SiO₂/Si substrate (SAMs/Si) there then iron nanoclusters solution was dropped on it through spin-coating (Fe/SAMs/Si). This catalytic template was used to grow CNTs and the synthesized carbon material was confirmed the bundles of dense SWCNTs with incorporation of ca.1% nitrogen. The SAMs has played an active role to support catalytic layer and also acted as a source of N-dope onto SWCNTs in CVD.

Keywords: SAMs, SWCNTs, CNTs, graphene, synthesis, n-doping