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Synthesis of high-quality single-walled carbon nanotube by arc-discharge

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Single-walled carbon nanotubes(SWNTs) has been synthesized by arc discharge method of a carbon electrode including Fe catalyst in hydrogen atmosphere. The synthesized SWNTs have been indicated high crystallinity and a clean surface by Raman spectrum, SEM and TEM. Moreover, the coexisting Fe catalyst nanoparticles can be completely eliminated by a two-step purification process (heating in air and mild hydrochloric acid treatment).

We suggest that a hydrogen arc discharge method and a simple purification method are the promising techniques to obtain high-quality SWNTs.