

Anti-agglomerating effect in vertically aligned carbon nanotubes derived by antisolvent precipitation of naphthalene

Riichiro Ohta, Itaru Gunjishima, Kazuma Shinozaki, Tatsuya Hatanaka, Atsuto Okamoto, and Koichi Nishikawa

Toyota Central R&D Laboratories, Inc., 41-1 Yokomichi, Nagakute, Aichi 480-1192, Japan

Supplementary Information

1. Optical micrographs

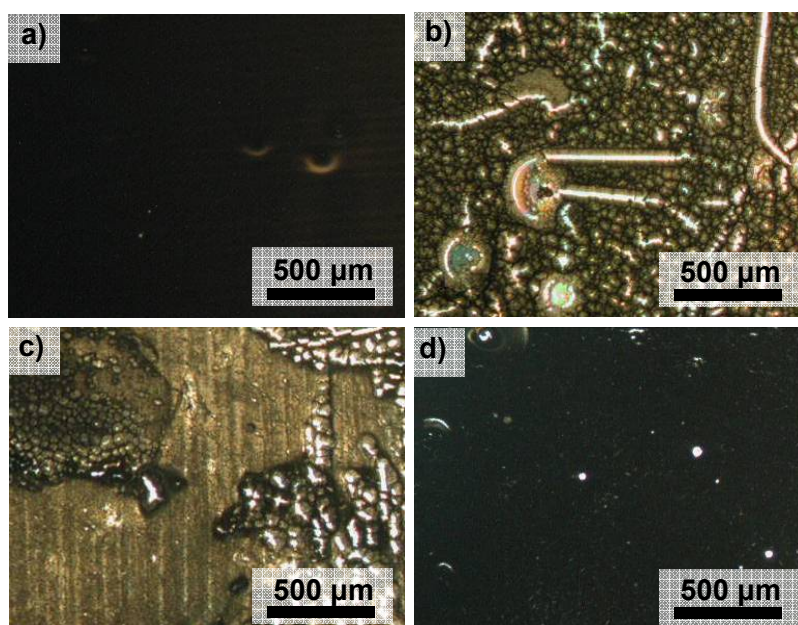


Fig. S1. Optical micrographs of VA-CNTs: (a) as-prepared VA-CNTs, (b) VA-CNTs subjected to process **A**, (c) VA-CNTs subjected to process **B**, and (d) VA-CNTs subjected to process **C**. The as-prepared VA-CNTs appeared very dark due to their low optical reflectance, as recently reported [Z. -P. Yang, L. Ci, J. A. Bur, S. -Y. Lin and P. M. Ajayan, *Nano Lett.*, 2008, **8**(2), 446]. The VA-CNTs subjected to processes **A** and **B** displayed with dark and light contrast patterns induced by CNT agglomeration, whereas most of the surface area retained a dark appearance after being subjected to process **C**.

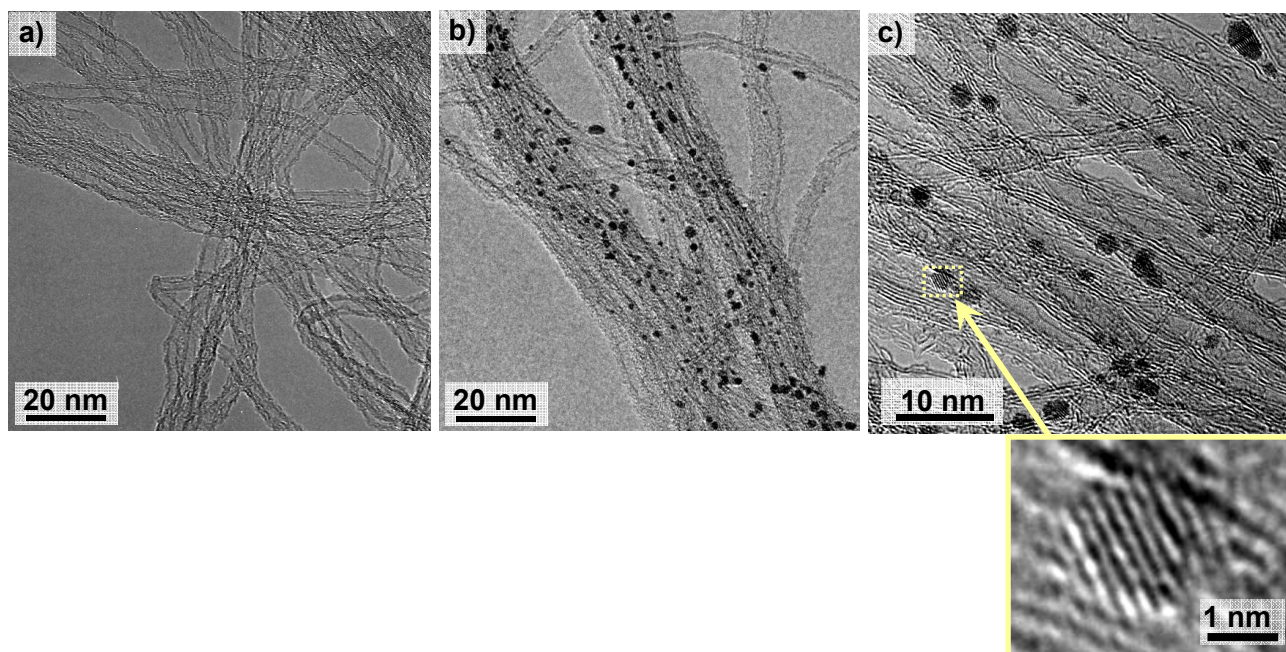


Fig. S2. Typical TEM images of (a) as-prepared CNTs, (b) CNTs deposited with Pt nanoparticles (Pt-CNTs), and (c) Pt-CNTs with high magnifications. The Pt nanoparticles had diameters less than 5 nm. Fringes in a Pt nanoparticle shown in the highest magnification image had a periodicity of 0.23 nm, which corresponds to the lattice spacing of Pt(111) plane. Pt-CNTs detached from the substrate were loaded onto a TEM grid by dispersion in EtOH by ultrasonication and then dropping onto the TEM grid, followed by evaporation of the EtOH. The Pt-CNTs in the TEM images are highly packed due to agglomeration during the EtOH evaporation step.