

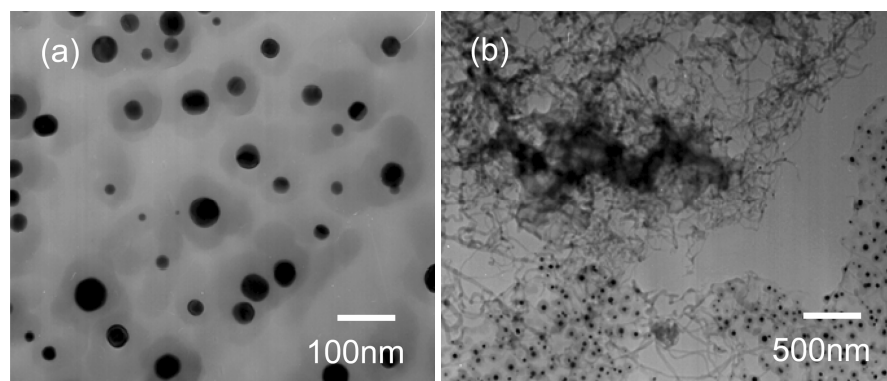
## Supplementary data

### **Area-selective growth of amorphous carbon nanofibers via catalytic decomposition of polyimide thin film**

Jung Hoon Kim, Nuri Oh, Chang Kyung Kim, Chong Seung Yoon,\*

#### Early stage of the carbon nanofiber growth

During the early stage of the carbon nanofiber formation, there was extensive mass transfer, resulting in coarsening of Au nanoparticles (~40 nm in diameter) which were completely surrounded by carbonaceous material as can be seen from Fig. 1 (a). It is speculated that these carbon-encapsulated Au became the sites for nanofiber nucleation and growth. Figure 1 (b) shows the carbon nanofibers growing from the encapsulated Au nanoparticles.



**Figure 1** Transmission electron microscopy images of the Au/Polyimide sample after heat treatment at 1000 °C for 5 min. prior to full conversion of the polyimide film into carbon nanofibers: (a) coarsened Au nanoparticles encapsulated by carbonaceous material, (b) image of both fully grown carbon nanofibers (upper region) and encapsulated Au nanoparticles (bottom region). Nanofibers growing out of the encapsulated Au nanoparticles can be seen in the bottom region.