Supplementary information

Mo catalyzed graphitization of amorphous carbon: An In situ TEM study

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Section 1: Electrical measurement setup for in situ Experiments

All the Insitu experiments were carried out using Transmission electron microcope (JEM ARM 200F) as shown in Figure S1(a). Specialized TEM holder EM-Z13200TSCOH from JEOL, was used. In this holder, piezo-controlled W STM probe from unisoku scientific instruments was used for electrical measurement. W probe and sample with Mo-CNF were arranged facing each other as shown in Fig S1(b). Electrical measurements were carried out using Agilent precision source/ Measure unit (B2912A) (Fig S1(d)). As shown by the schematic Fig S1(e), during In situ experiment, W probe is brought in the contact the Mo-CNF. Regulated DC power supply PMC160-0.4A (kikusui corp.) (Fig S1(c))is used for controlling the piezo system.

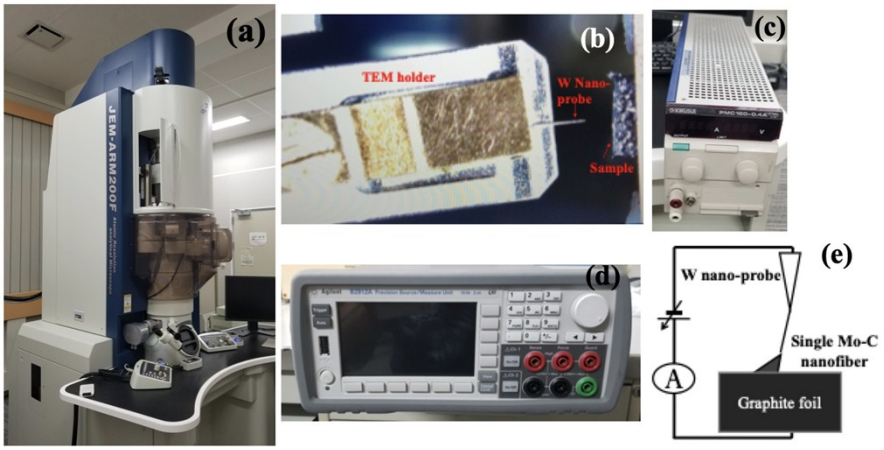

Figure S1 (a) TEM JEM ARM 200F used in this study. (b) Fig showing arrangement of W probe and sample on In situ TEM holder. (c) Regulated DC power supply for controlling piezo electric system (d) Agilent precision source/ Measure unit for supplying bias voltage (e) Schematics showing in situ experiment setup.

Section 2: EDS measurement of the detached graphitic structure

To study if W is found in the graphitized CNF, graphitized CNF was detached from the probe and EDS measurement was carried out. Almost no W atoms was found confirming no significant movement from W probe to the graphitized structure as shown in Figure S2 below.

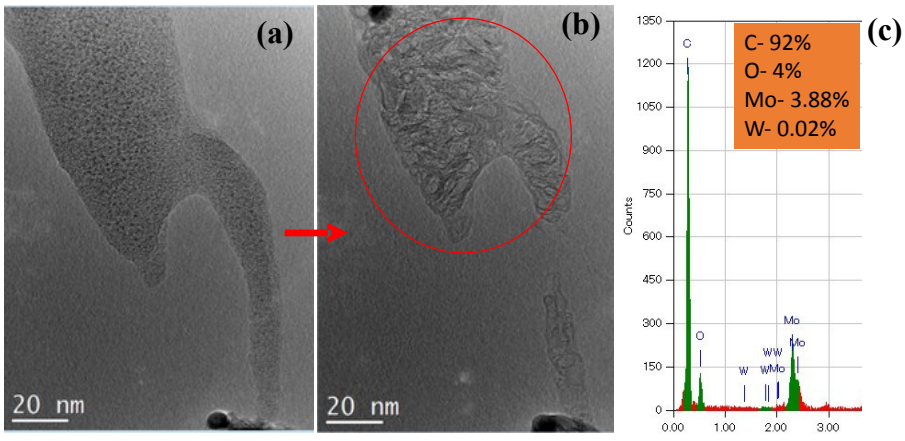

Figure S2: (a) Mo-CNF converted to (b) graphitic structure under application of bias. (c) EDS measurement taken around the circled area of Fig (b) showing almost no presence of

W.