

## Electronic Supplementary Information for

# Predominant Nanoice Growth in Single-Walled Carbon Nanotubes by Water-Vapor Loading

*Tomonori Ohba,\* Sei-ichi Taira, Kenji Hata, Katsumi Kaneko, and Hirofumi Kanoh*

\* To whom correspondence should be addressed

E-mail: ohba@pchem2.s.chiba-u.ac.jp

This PDF file includes:

N<sub>2</sub> adsorption isotherm on SWCNT at 77 K

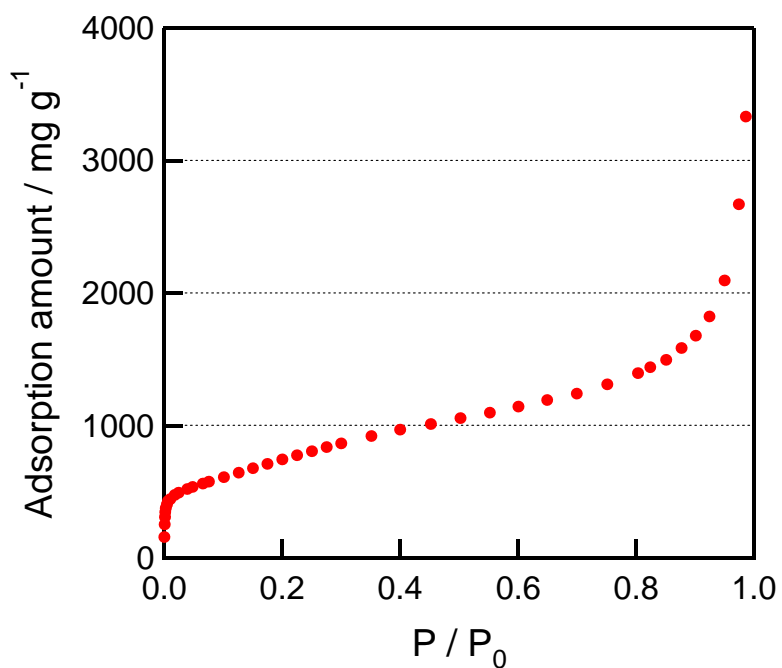
Water-vapor adsorption isotherm on SWCNT at 303 K

XRD patterns of water adsorbed on SWCNTs

Nanoice and nanowater formation in SWCNTs

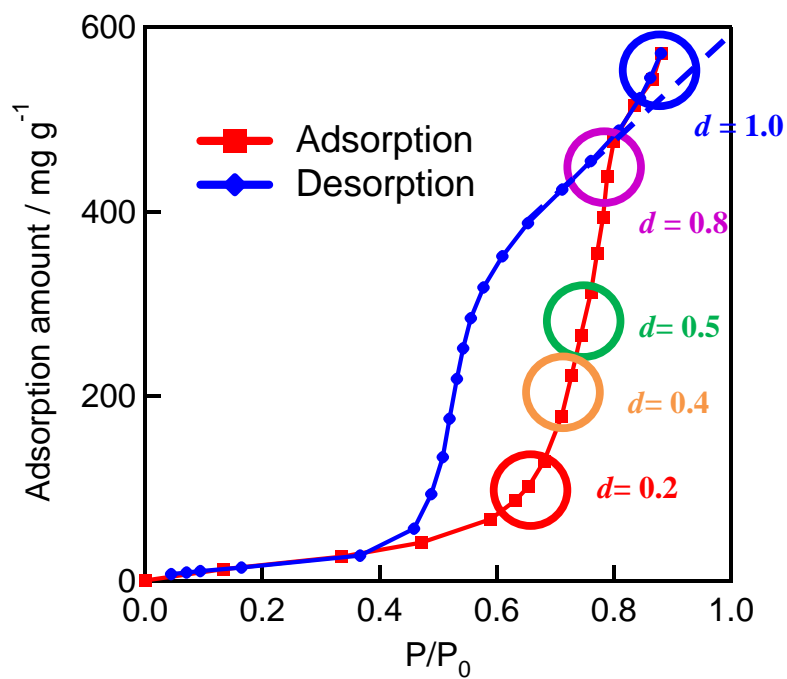
Transmission electron microscopy image

### N<sub>2</sub> adsorption isotherm on SWCNT at 77 K



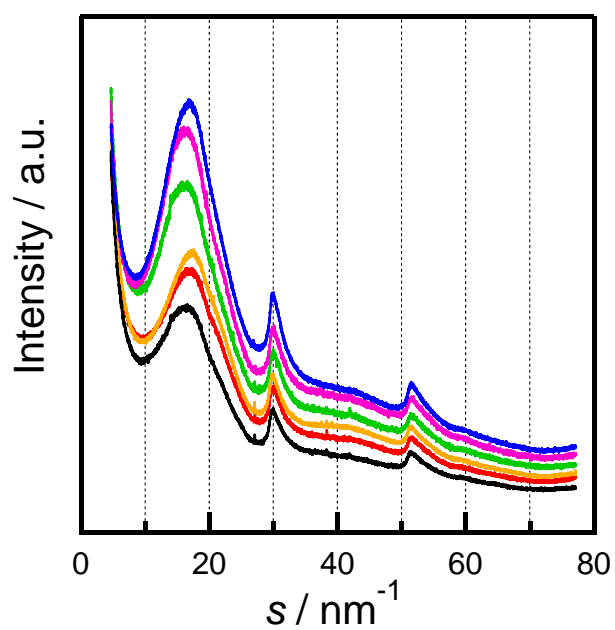
**Fig. S1** N<sub>2</sub> adsorption isotherms at 77 K for SWCNT.  $\alpha_s$  analysis of the N<sub>2</sub> adsorption isotherm shows a micropore volume of 0.59 ml g<sup>-1</sup> and specific surface area of 1540 m<sup>2</sup> g<sup>-1</sup>.

### Water-vapor adsorption isotherm on SWCNT at 303 K



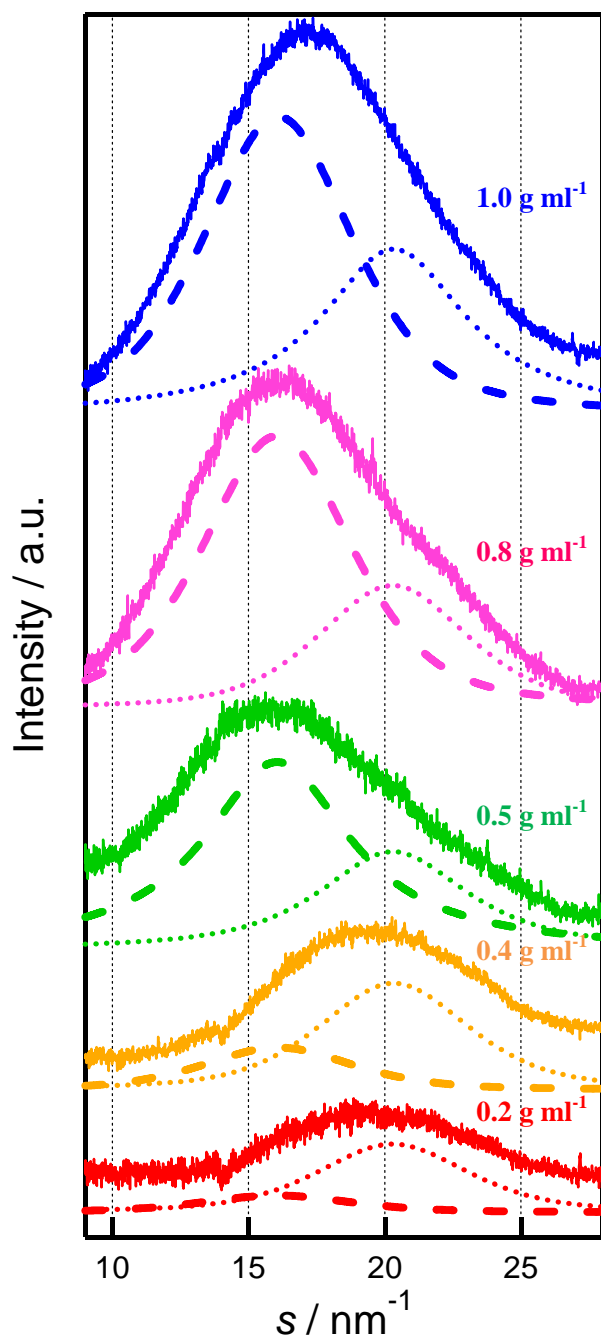
**Fig. S2** Water-vapor adsorption isotherm on SWCNT at 303 K. Adsorbed densities  $d$  of water vapor adsorbed in the SWCNTs were obtained from the water-vapor adsorption isotherms.

## XRD patterns of water adsorbed on SWCNTs



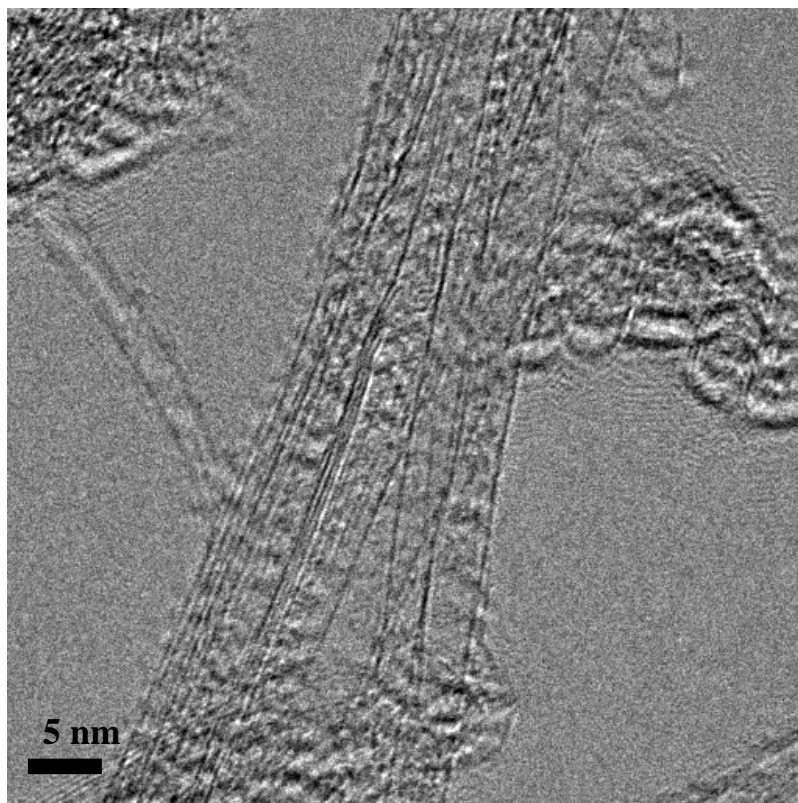
**Fig. S3** XRD patterns of water adsorbed on SWCNTs at 303 K. Adsorbed water densities are 1.0, 0.8, 0.5, 0.4, 0.2, and 0.0 g ml<sup>-1</sup> (from top to bottom).

## Nanoice and nanowater formation in SWCNTs



**Fig. S4** Difference XRD patterns and fitting curves under the assumption of nanoice (broken curve) and nanowater formation (dashed curve). Water adsorbed densities of 1.0, 0.8, 0.5, 0.4, and 0.2 g ml<sup>-1</sup> (from top to bottom).

### Transmission electron microscopy image



**Fig. S5** Transmission electron microscopy image of SWCNTs obtained by JEM-2100F at 120 kV (JEOL Co.; Chemical analysis center at Chiba University). Average diameter of SWCNTs is approximately 2–3 nm.