

Free-standing graphene oxide/oxidized carbon nanotube films with mixed proton and electron conductor properties

Nurun Nahar Rabin,^{a,b} Md. Saidul Islam,^{a,b} Mohammad Atiqur Rahman,^b
Tagawa Ryuta,^b Yuta Shudo,^c Yoshihiro Sekine,^{b,d} and Shinya Hayami^{i*a, b, e}

^aInstitute of Industrial Nanomaterials (IINa), Kumamoto University, 2-39-1 Kurokami, Chuo-ku, Kumamoto 860-8555, (Japan).

^bDepartment of Chemistry, Graduate School of Science and Technology, Kumamoto University, 2-39-1 Kurokami, Chuo-ku, Kumamoto 860-8555, (Japan).

^cNational Institute of Advanced Industrial Science and Technology (AIST), Japan, Japan.

^dPriority Organization for Innovation and Excellence, Kumamoto University, 2-39-1 Kurokami, Chuo-ku, Kumamoto 860-8555 (Japan).

^eInternational Research Center for Agricultural and Environmental Biology (IRCAEB)2-39-1 Kurokami, Chuo-ku, Kumamoto 860-8555, (Japan).

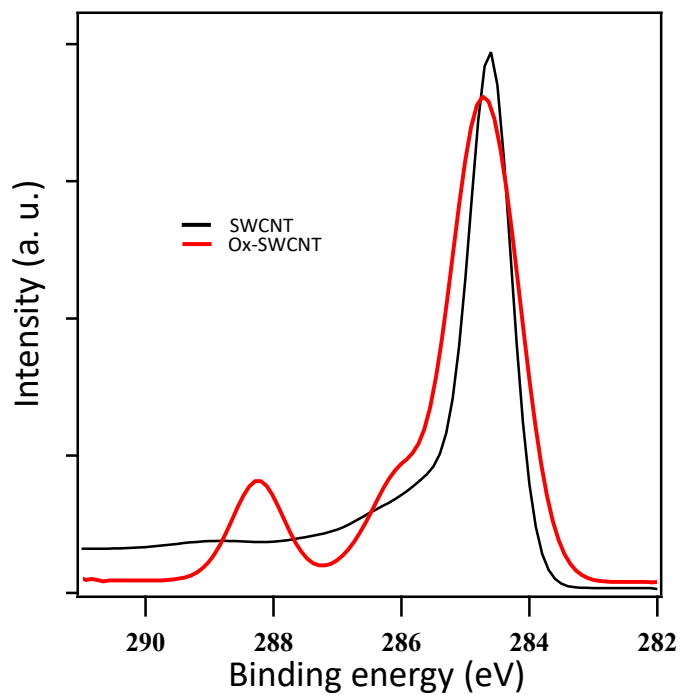


Figure S1: C1s XPS spectra of SWCNT and Ox-SWCNT

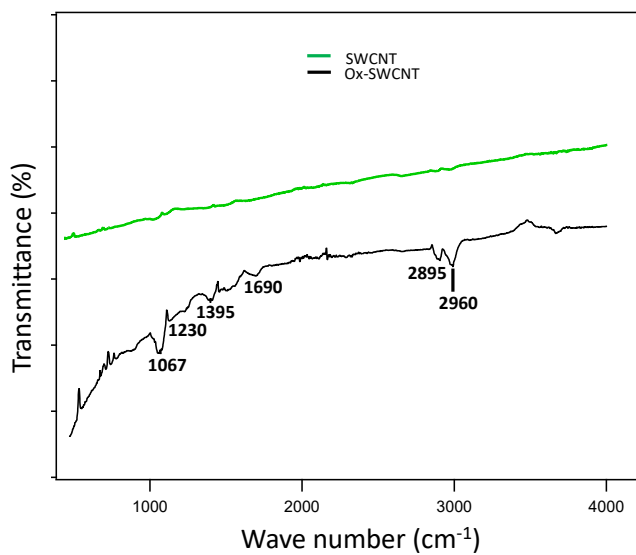


Figure S2: FT-IR spectra of SWCNT and Ox-SWCNT

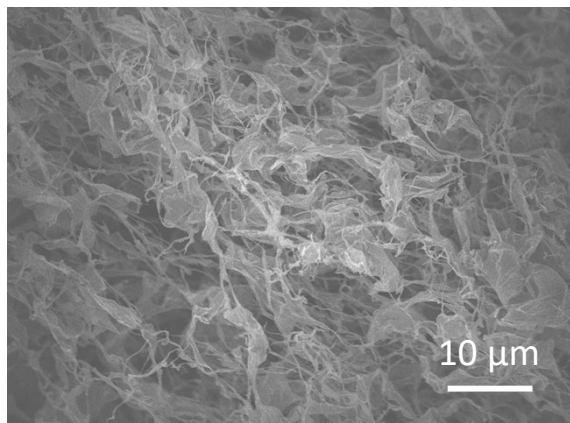


Figure S3: SEM image of GO/Ox-SWCNT representing the distribution of GO and Ox-SWCNT and demonstrates the attachment of Ox-SWCNT to GO

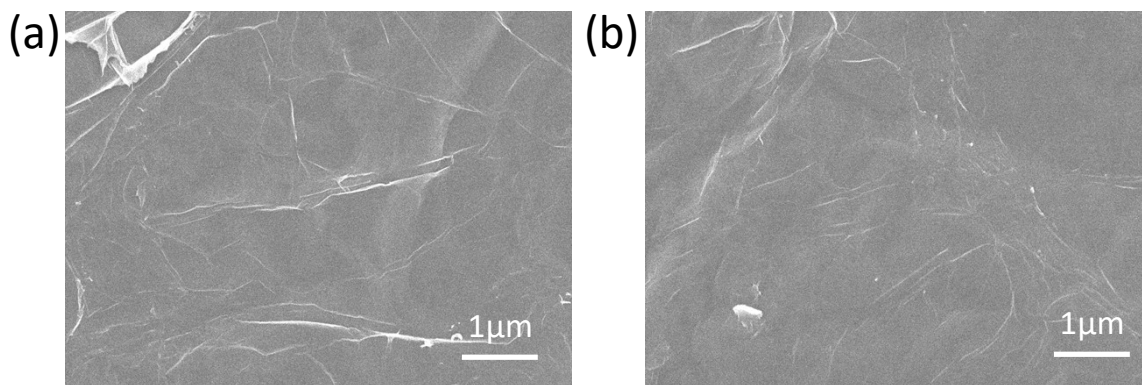


Figure S4: SEM image of GO/Ox-SWCNT (a) before and (b) after the bending of film

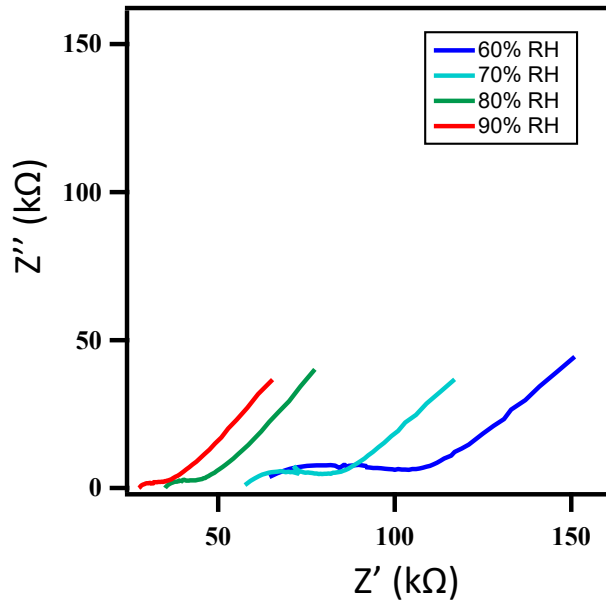


Figure S5: Representative cole-cole plot of of GO/Ox-SWCNT depending on RH at room temperature.

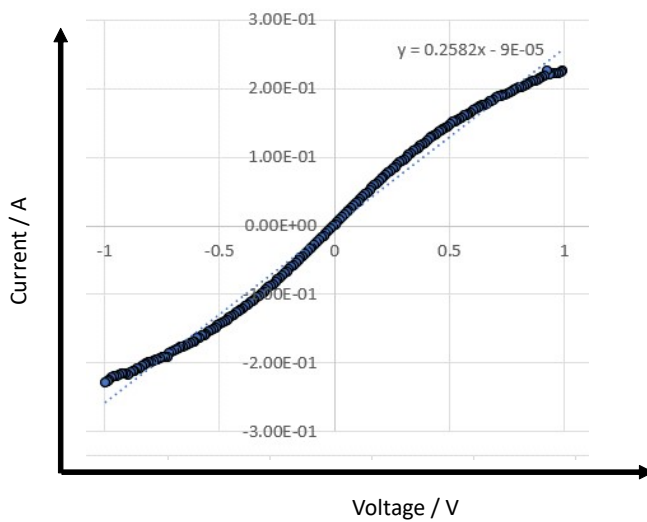


Figure S6: I-V plot of pristine SWCNT measured in the in-plane direction at room temperature and 50% RH for measurement of electrical conductivity in the out of plane direction.

