

Electronic Supplementary Information (ESI)

Radical Scavenging Activity of Carbon Nanotubes: Toward Appropriate Selection of Radical Initiator

Taiyo Shimizu^a, Ryoichi Kishi^{*,a}, Takeo Yamada^a and Kenji Hata^a

- a. CNT-Application Research Center, National Institute of Advanced Industrial Science and Technology (AIST)
Tsukuba Central 5 1-1-1 Higashi Tsukuba Ibaraki 305-8565 Japan

Corresponding Author

*E-mail: r-kishi@aist.go.jp

Supplemental Figures

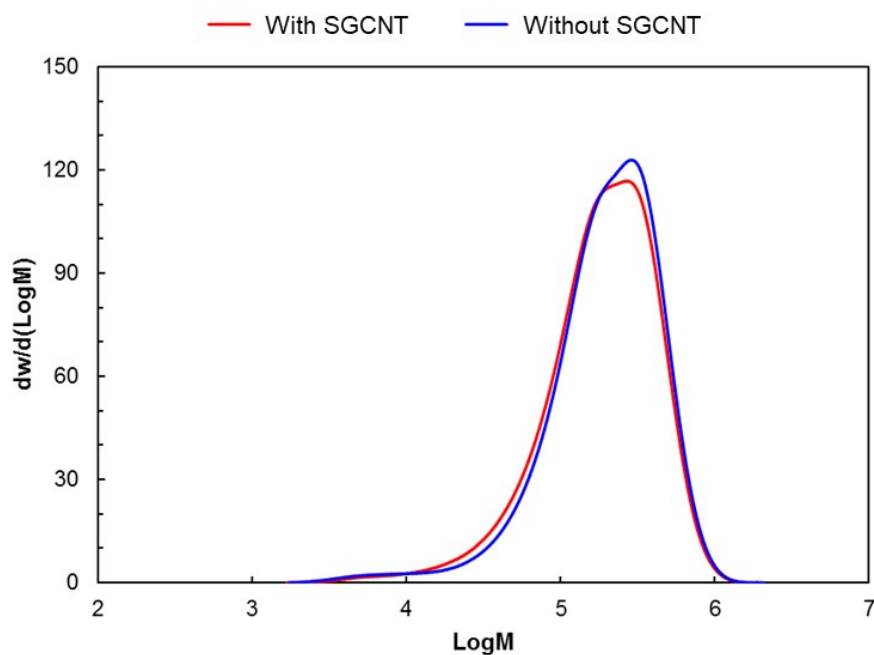


Figure S1. Molecular weight distributions of PSt initiated by azobisisobutyronitrile (AIBN) with (0.10 wt%) and without SGCNT.

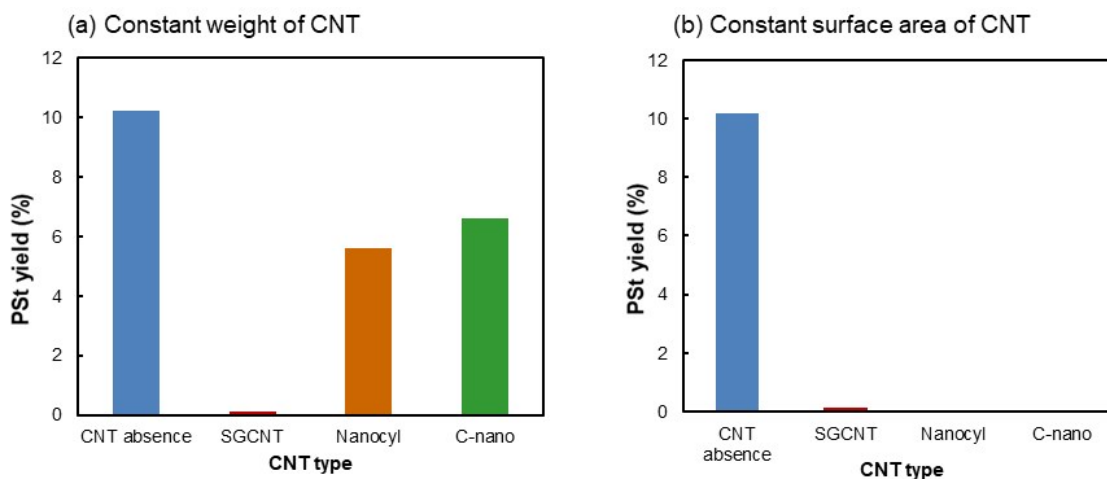


Figure S2. The yields of styrene in the presence of various CNT with (a) same weight (b) same total surface area (adjusted by amount of added CNTs). The values of specific surface area are $1080 \text{ m}^2/\text{g}$ for SGCNT, $280 \text{ m}^2/\text{g}$ for Nanocyl, and $210 \text{ m}^2/\text{g}$ for Cnano.[S1] These surface areas are obtained from nitrogen adsorption/desorption measurement at 77 K and calculated by applying Brunauer-Emmett-Teller (BET) theory.[S2]

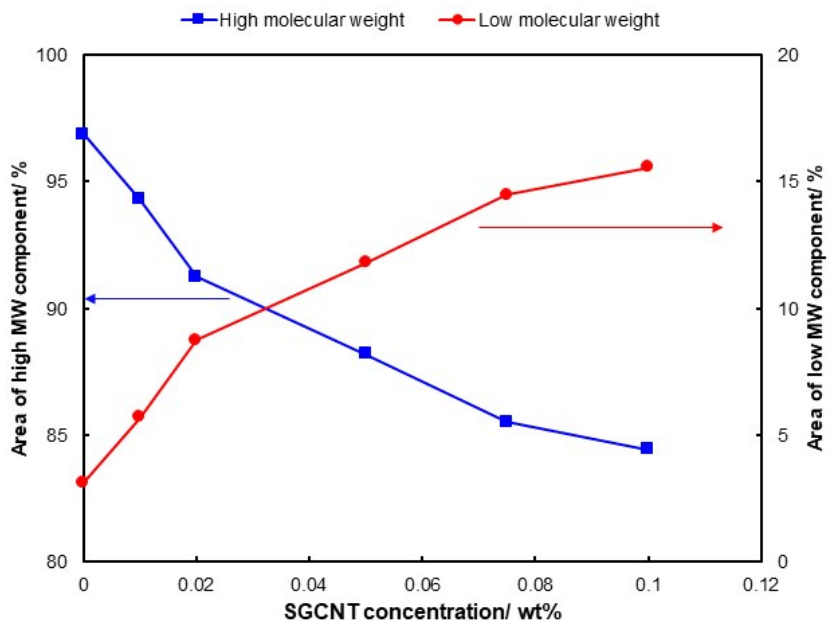


Figure S3. Comparison of the fraction of high and low molecular weight component PSt, calculated from the peak area of chromatograms obtained from gel permeation chromatography (GPC).

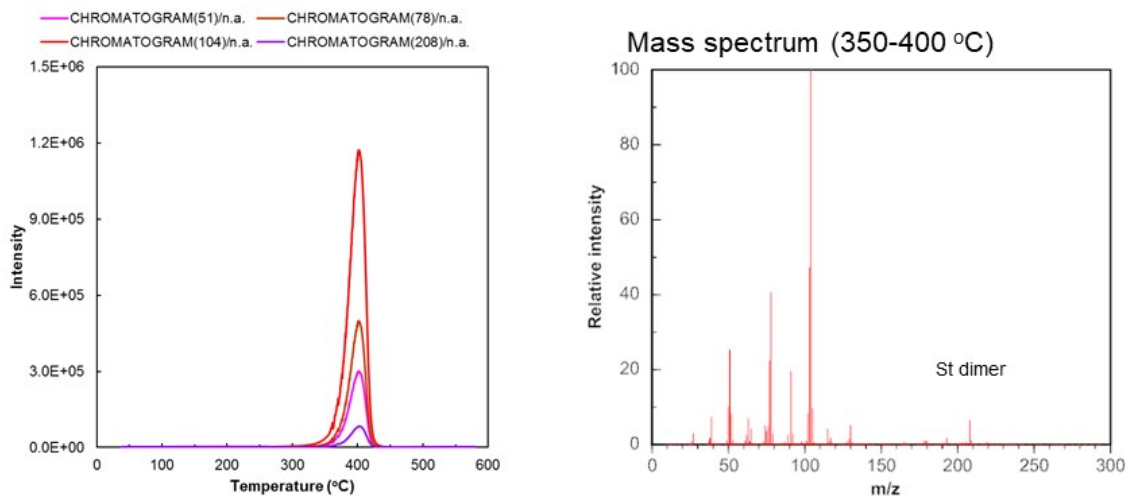


Figure S4. Ion current intensity and mass spectra of the evolved gas from standard PSt.

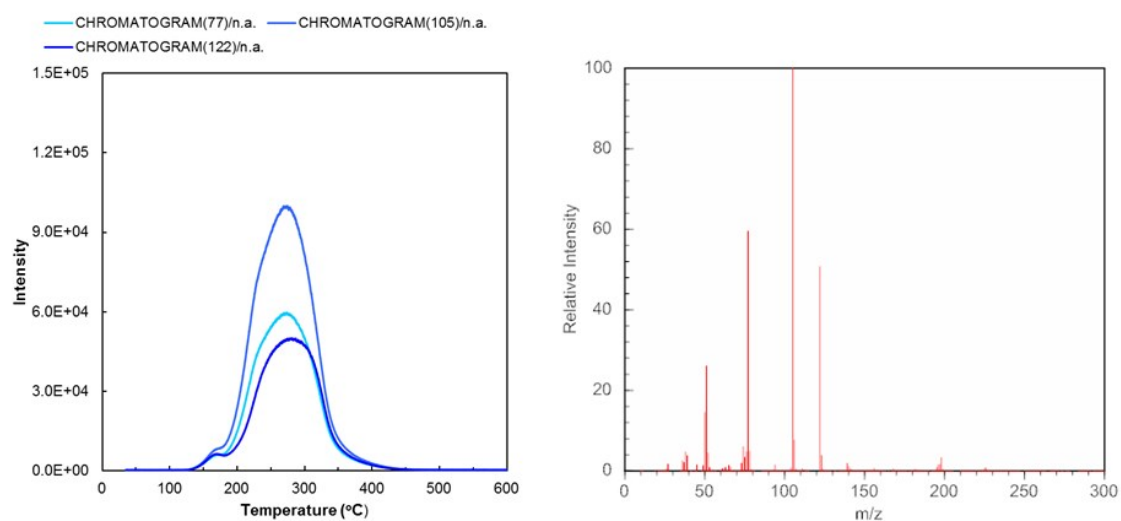


Figure S5. Ion current intensity and mass spectra of the evolved gas from SGCNT reacted with BPO in tetrachloromethane.

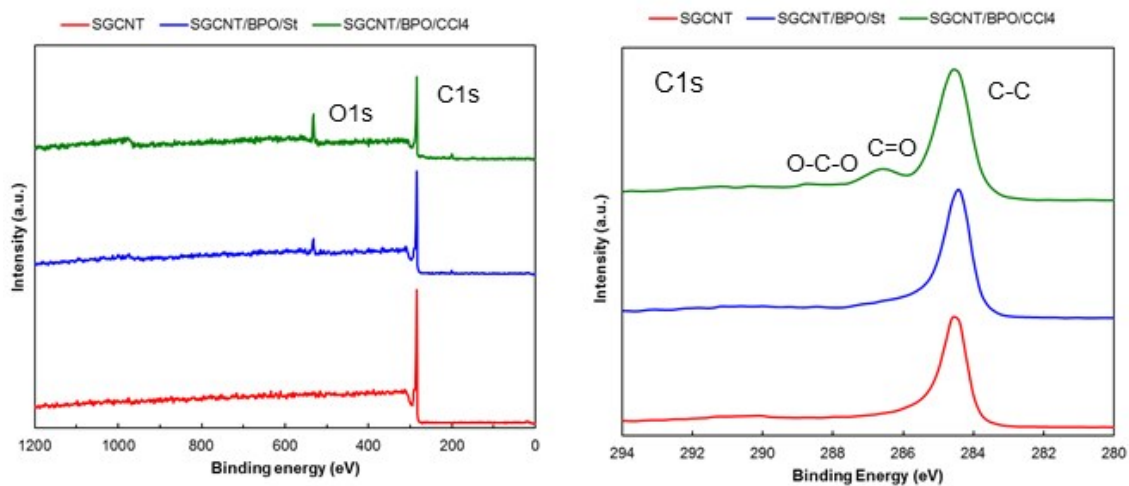


Figure S6. X-ray photoelectron spectra obtained from pristine SGCNT, SGCNT reacted with BPO in styrene, and SGCNT reacted with BPO in tetrachloromethane instead of styrene.

Reference

- S1. K. Kobashi, S. Ata, T. Yamada, D. N. Futaba, T. Okazaki and K. Hata, *ACS Appl. Nano Mater.*, 2019, **2**, 4043-4047
- S2. S. Brunauer, P. H. Emmett and E. Teller, *J. Am. Chem. Soc.*, 1938, **60**, 309-319