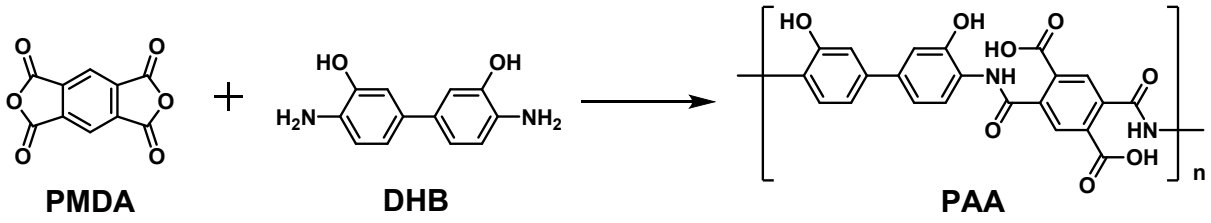
Supporting Information

A facile method for transparent carbon nanosheets heater based on polyimide

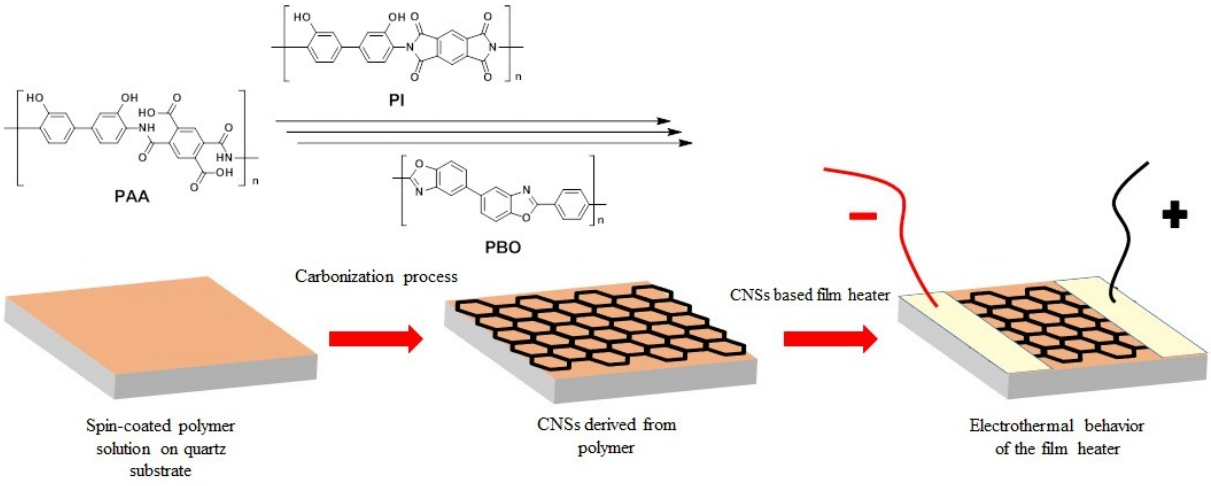
Hamid Souri [a,†], Seong Jun Yu [b,†], Hyeonuk Yeo [a], Munju Goh [a], Jun-Yeon Hwang [a], Seung Min Kim [a], Bon-Cheol Ku [a], Young Gyu Jeong [b,*], and Nam-Ho You [a,*]

[a] Carbon Convergence Materials Research Center, Institute of Advanced Composites Materials, Korea Institute of Science and Technology, Eunha-ri san 101, Bondong-eup, Wanju-gun, Jeollabuk-do, 565-905, Korea

[b] Department of Advanced Organic Materials and Textile System Engineering, Chungnam National University, Daejeon 34234, Korea



Scheme S1. Schematic illustration of the poly(amic acid) structure as a CNS precursor



Scheme S2. Schematic illustration of the transfer-free process of the CNS using polymer and its use as transparent film heater

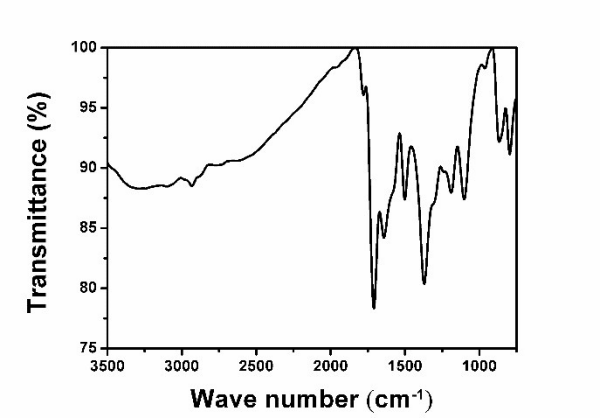


Figure S1. FT-IR spectra of precursor PAA film.

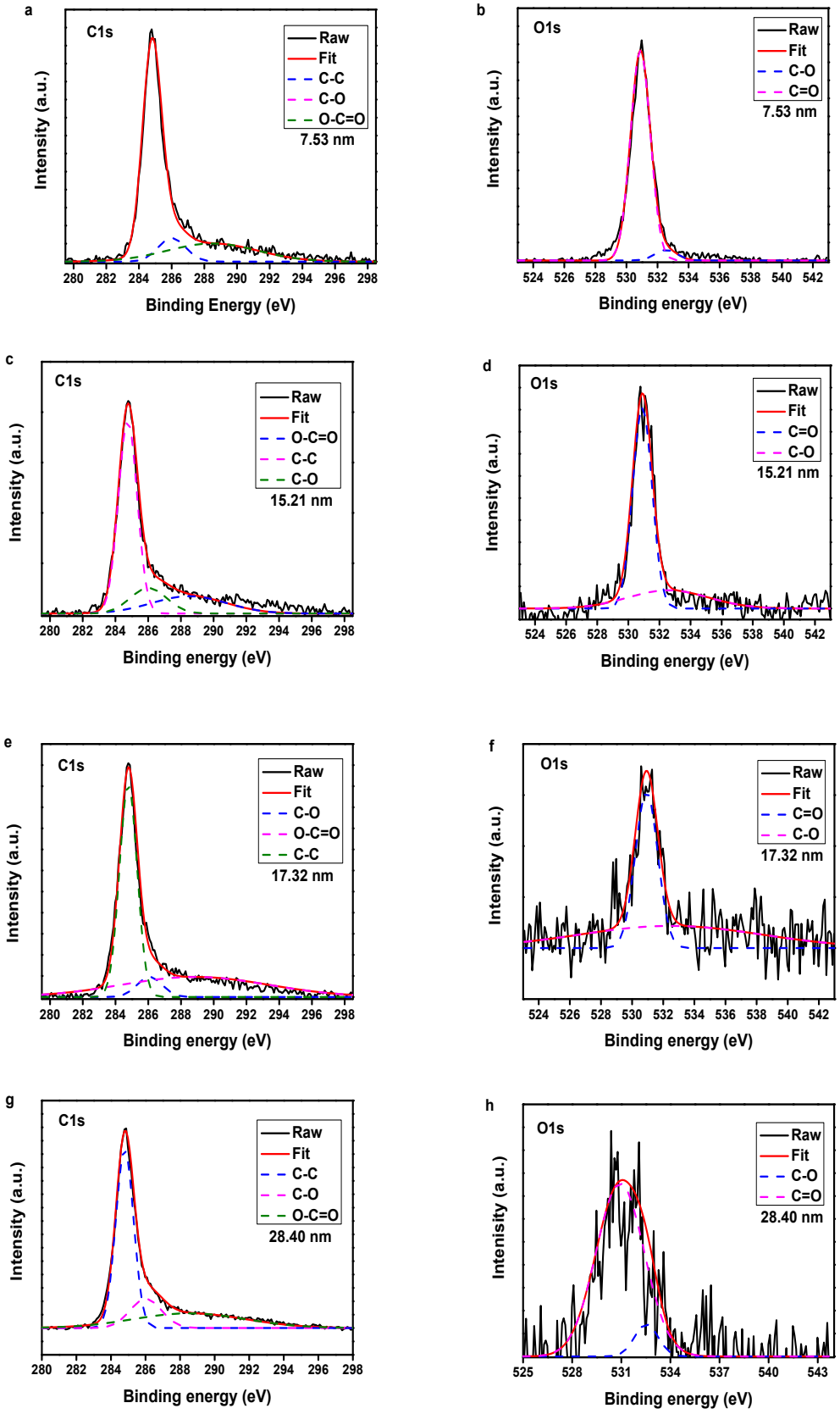


Figure S2. (a, c, e, g) The deconvoluted XPS C1s and (b, d, f, h) O1s spectrum of the CNS films derived from various polymer solutions.

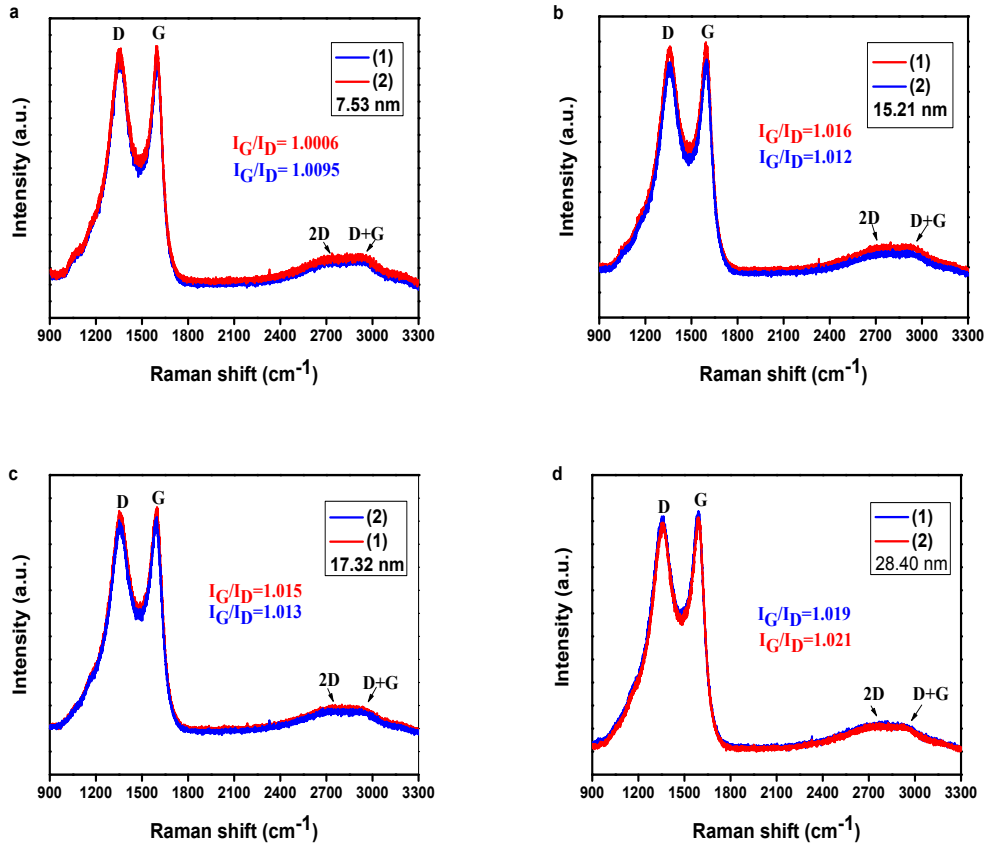


Figure S3. Two representative Raman spectra of CNS films with different thicknesses of 7.53-28.40 nm.

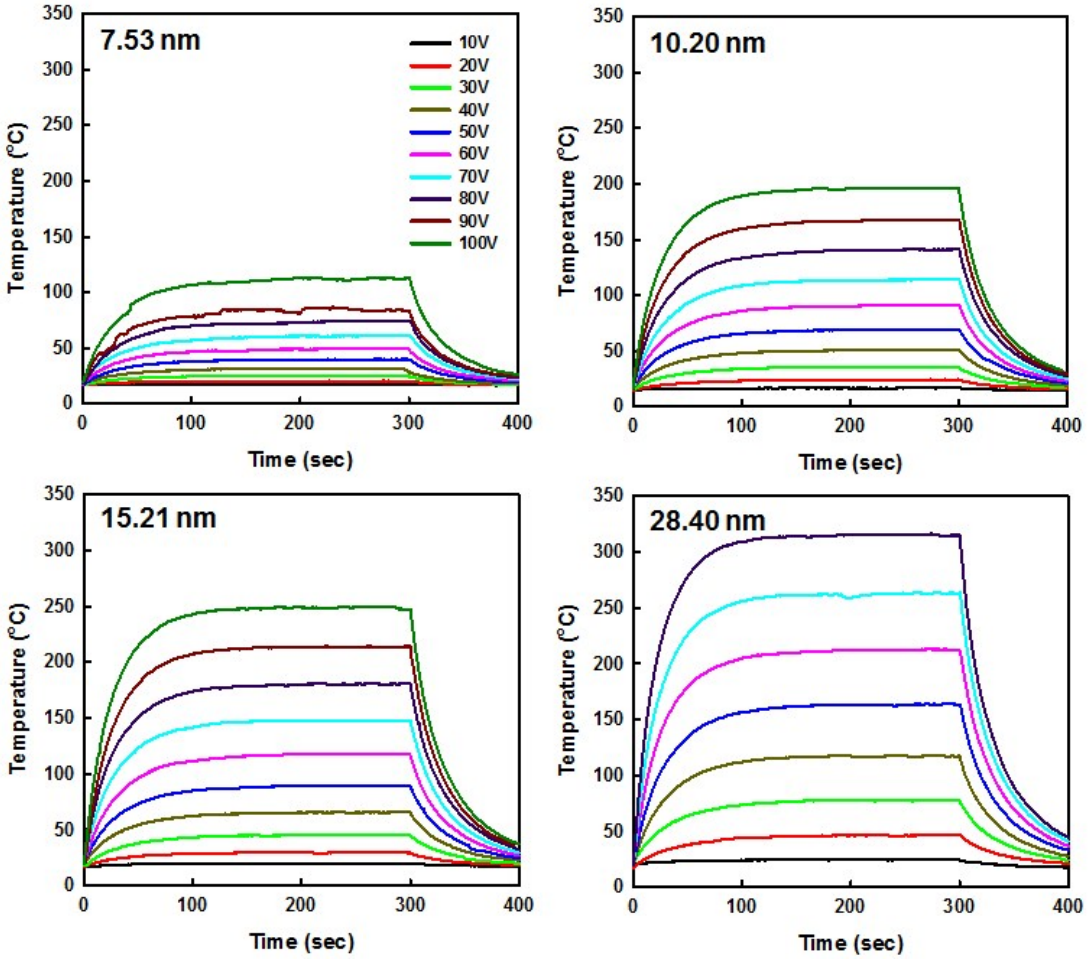


Figure S4. Time-dependent temperature changes of the CNS films with different thicknesses under a variety of applied voltages of 10-100 V.