Electronic Supplementary Information

Enhanced chemical and physical properties of PEDOT doped by anionic

polyelectrolytes prepared from acrylic derivatives and application to nanogenerators

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Figure S1. Chemical structures of PSS, P(SS-co-HBA), P(SS-co-CEA), and their ¹H-NMR spectra (d)



Figure S2. ATR-FTIR spectra of PSS (a), P(SS-co-HBA) (b), and P(SS-co-CEA) (c) at annealing temperatures; RT (black), 60 °C (red), and 140 °C (blue)



Figure S3. Contact angle images of DI water droplets on PSS film (RT (a)), (60°C (b)), (140°C (c)), P(SS-co-HBA) film (RT (d)), (60°C (e)), (140°C (f)), and P(SS-co-CEA) film (RT (g)), (60°C (h)), (140°C (i)) with various annealing temperature



Figure S4. Topographic (left) and phase (right) images of PEDOT:PSS (a-c), PEDOT:P(SS-co-HBA) (d-f), and PEDOT:P(SS-co-CEA) (g-i) films; RT (a, d, g), 60 °C (b, e, h), and 140 °C (c, f, i)



Figure S5. Resistance changing ratio with bending test at speed (5 mm/s) with displacement (2 mm) for 1,000 cycles of PET films deposited PEDOT:PSS, PEDOT:P(SS-co-HBA), and PEDOT:P(SS-co-CEA) at RT, 60 °C, and 140 °C annealing (a). Before bending (b) and after bending (c)



Figure S6. Schematic illustration of PVDF-based piezoelectric nanogenerator and its working mechanism in a stretching and releasing cycle; without strain (a), stretching (b), and releasing (c)



Figure S7. Output voltages, currents and power of PNG-(1-3)(RT and 60) at various load resistance



Figure S8. Output voltages, currents and power of PNG-(1D-3D)(RT and 60) at various load resistance



Figure S9. Initial output voltages of PNG-1D(60) (black), PNG-2D(60) (red), and PNG-3D(60) (blue). The output voltages after 20 days of PNG-1D(60) (magenta), PNG-2D(60) (olive), and PNG-3D(60) (navy).



Figure S10. Charging voltage curves (RT (a) and 60 °C (b)) at 1 Hz of 1μ F capacitor, comparison of charging voltage performance between 1 Hz and 5 Hz condition (c). Charging circuit diagram (d)

Charging V in 60s	1 Hz	2 Hz	3 Hz	4 Hz	5 Hz
PNG-1(RT)	0.80	1.55	2.12	2.69	3.26
PNG-2(RT)	0.86	1.68	2.49	3.26	3.98
PNG-3(RT)	0.86	1.60	2.25	2.94	3.60
PNG-1(60)	0.80	1.55	2.27	2.94	3.55
PNG-2(60)	0.97	1.95	2.88	3.77	4.63
PNG-3(60)	0.90	1.69	2.36	3.06	3.73

Table S1. The charging voltage performance at various conditions with PNG-(1-3)(RT) and PNG-(1-3)(60)