Electronic supplementary information

Multidimensional Structure and Enhancement
Performance of Modified Graphene/Carbon
Nanotube Assemblies in Tribological Properties of
Polyimide Nanocomposites

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**Fig. S1** Schematic diagram of the contact configuration of the reciprocating friction and wear testing machine.

**Fig. S2** Raman spectra of MG, MCNT and GCNT11.

**Fig. S3** Size distribution by number of GCNT41, GCNT11 and GCNT14.
**Fig. S4** FESEM images showing (a) half-open graphene-CNT ball and (b) intact graphene-CNT ball outside the fracture surface of GCNT41/PI specimen.

**Fig. S5** Storage modulus of virgin PI and PI composites at 150 °C and 200 °C.
Fig. S6 SEM images of worn surfaces of (a) virgin PI, (c) MG/PI and (e) MCNT/PI specimens. SEM images of wear debris of (b) virgin PI, (d) MG/PI and (f) MCNT/PI specimens.