

Supporting Information

The FTIR spectra of granular PANI, rPANI-NFs, GO/PANI and rGO/PANI are shown in the Figure. S1. The GO/granular PANI composite was prepared using APS as oxidizing agent. Before polymerization, aniline monomer and GO colloids were homogenized according to the study of Zhang.¹ Comparing to rPANI-NFs, the bands of rGO/PANI composites corresponding to the aromatic C=C stretching of the quinonoid ring and aromatic C=C stretching of the benzenoid ring are red shifted from 1568 and 1509 cm⁻¹ to 1565 and 1484 cm⁻¹, respectively. Besides, the band corresponding to the C-N stretching of the secondary aromatic amine of PANI-NFs (1312 cm⁻¹) was red-shifted to 1294 cm⁻¹ of rGO/PANI. The red-shift of the bands in the spectrum of rGO/PANI composites might be the result of the π - π interaction between graphene nanosheets and rPANI-NFs.² Similar red-shifts are also observed in the case of granular PANI versus GO/PANI (1577, 1492 and 1299 cm⁻¹ to 1571, 1477 and 1293 cm⁻¹, respectively), which indicates the existence of π - π interaction between GO nanosheets and GO/PANI composites.

Reference:

1. W. L. Zhang, B. J. Park and H. J. Choi, *Chem. Commun.*, 2010, **46**, 5596-5598.
2. J. Luo, S. Jiang, Y. Wu, M. Chen and X. Y. Liu, *J. Polym. Sci. Pol. Chem.*, 2012, **50**, 4888-4894.

Figure S1 FTIR spectrum of granular PANI, rPANI-NFs, GO/PANI and rGO/PANI composites.

