Electronic Supplementary Material (ESI) for Journal of Materials Chemistry A. This journal is © The Royal Society of Chemistry 2015

**Supporting Informations:** 

## Fabrication of Core-Multishell MWCNT/Fe<sub>3</sub>O<sub>4</sub>/PANI/Au Hybrid Nanotubes with High-Performance Electromagnetic Absorption

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Figure S1. SEM image of MWCNTs.



Figure S2. UV-Vis spectra of MWCNT, PANI, MWCNT/PANI, and MWCNT/Fe<sub>3</sub>O<sub>4</sub>/PANI.



Figure S3. EM wave absorption characteristics of MWCNT/Fe $_3O_4$ /PANI/Au composites with loadings of (a) 10 wt%, (b) 20 wt %, (c) 30 wt %, (d) 40 wt %, (e) 50 wt %, (f) 60 wt %.