Supplementary Materials: Metamaterial Behavior of Polymer Nanocomposites Based on Polypropylene/Multi-Walled Carbon Nanotubes Fabricated by Means of Ultrasound-Assisted Extrusion

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Four different fabrication methods were used to fabricate the polymer nanocomposites: W-U (without ultrasound), F-U (fixed-frequency ultrasound-assist fabrication), V-U (variable-frequency ultrasound-assist fabrication), and PT (pretreatment of MWCNT in a fluidized air-bed with an ultrasound probe).

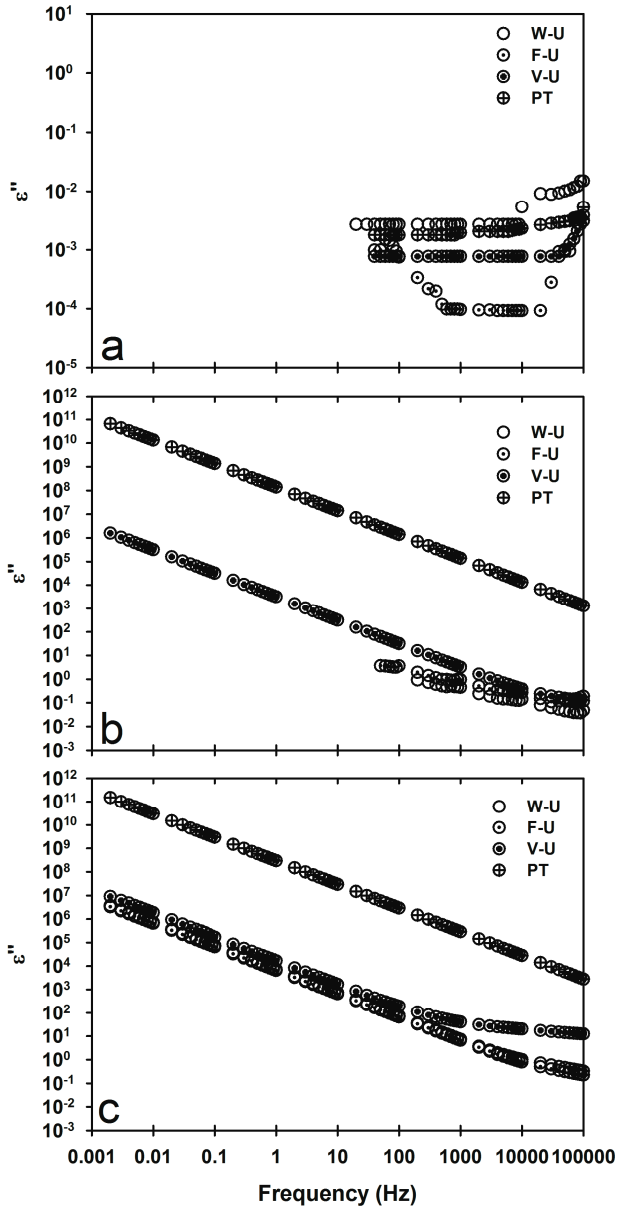


Figure S1. ε″ for (**a**) iPP$_{MFI=2.5}$/MWCNT; (**b**) iPP$_{MFI=34}$/MWCNT; and (**c**) iPP$_{MFI=1200}$/MWCNT fabricated using different ultrasound-assisted extrusion methods.

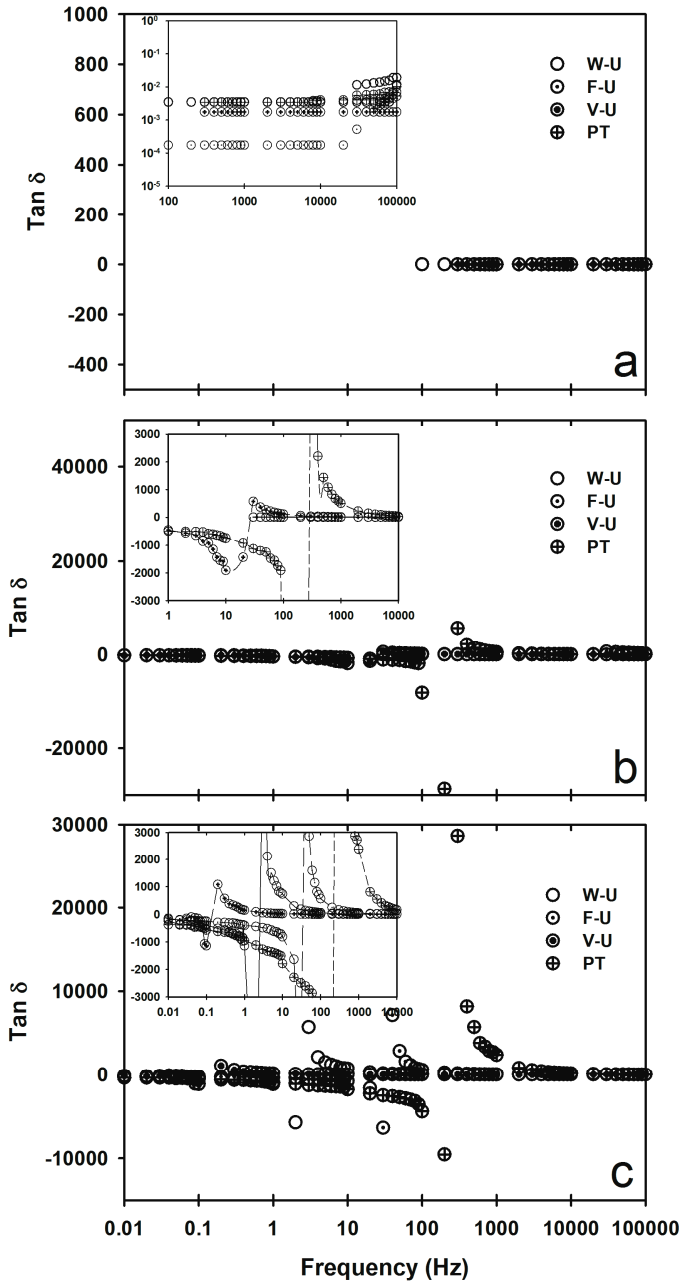


Figure S2. Tan δ for (**a**) iPP$_{MFI=2.5}$/MWCNT; (**b**) iPP$_{MFI=34}$/MWCNT; and (**c**) iPP$_{MFI=1200}$/MWCNT fabricated using different ultrasound-assisted extrusion methods.

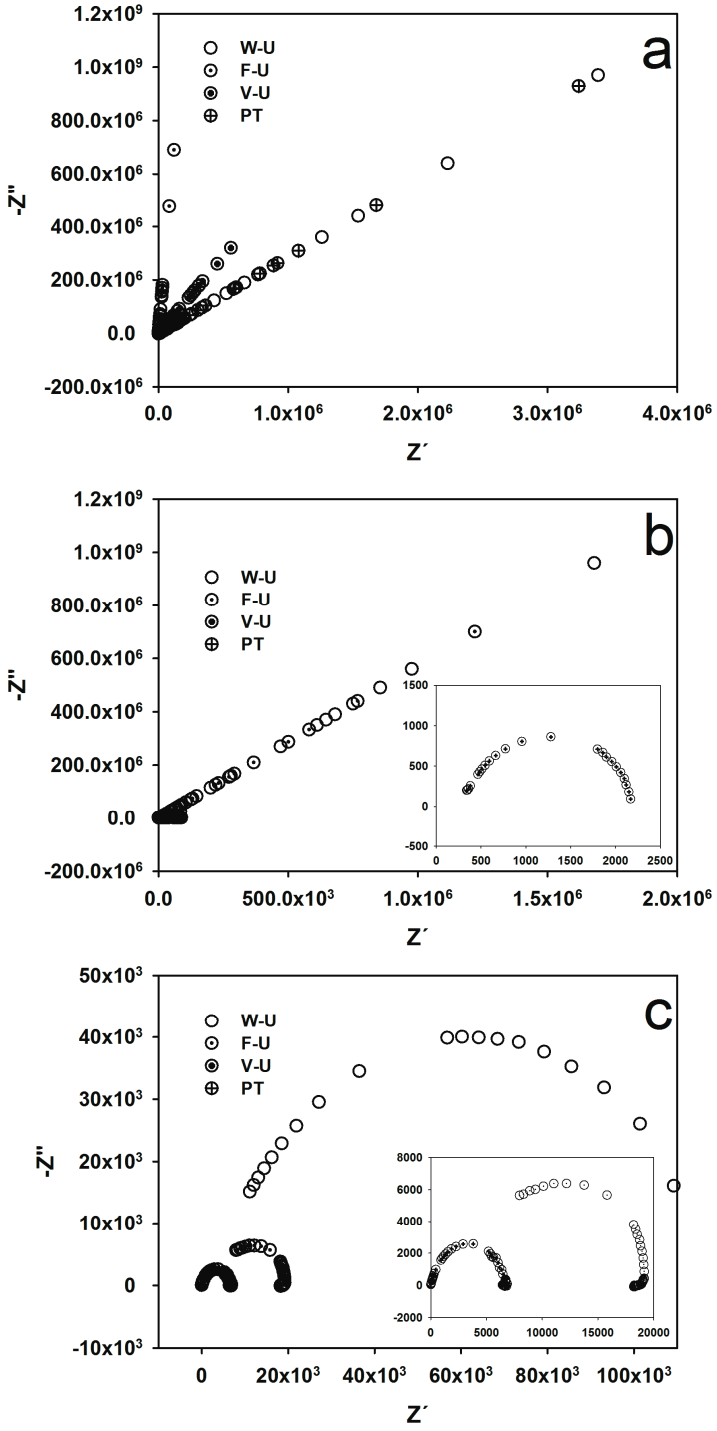


Figure S3. Nyquist plots for (**a**) iPP$_{MFI=2.5}$/MWCNT; (**b**) iPP$_{MFI=34}$/MWCNT; and (**c**) iPP$_{MFI=1200}$/MWCNT fabricated using different ultrasound-assisted extrusion methods.

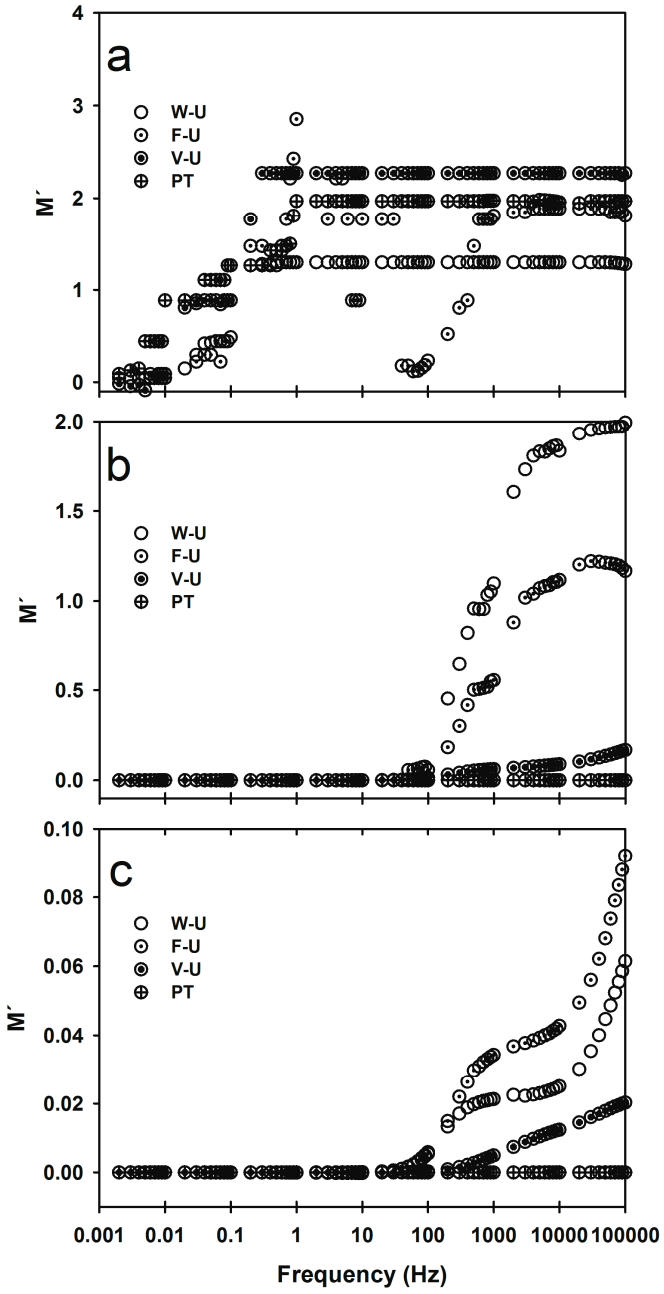


Figure S4. M′ for (**a**) iPP$_{MFI=2.5}$/MWCNT; (**b**) iPP$_{MFI=34}$/MWCNT; and (**c**) iPP$_{MFI=1200}$/MWCNT fabricated using different ultrasound-assisted extrusion methods.

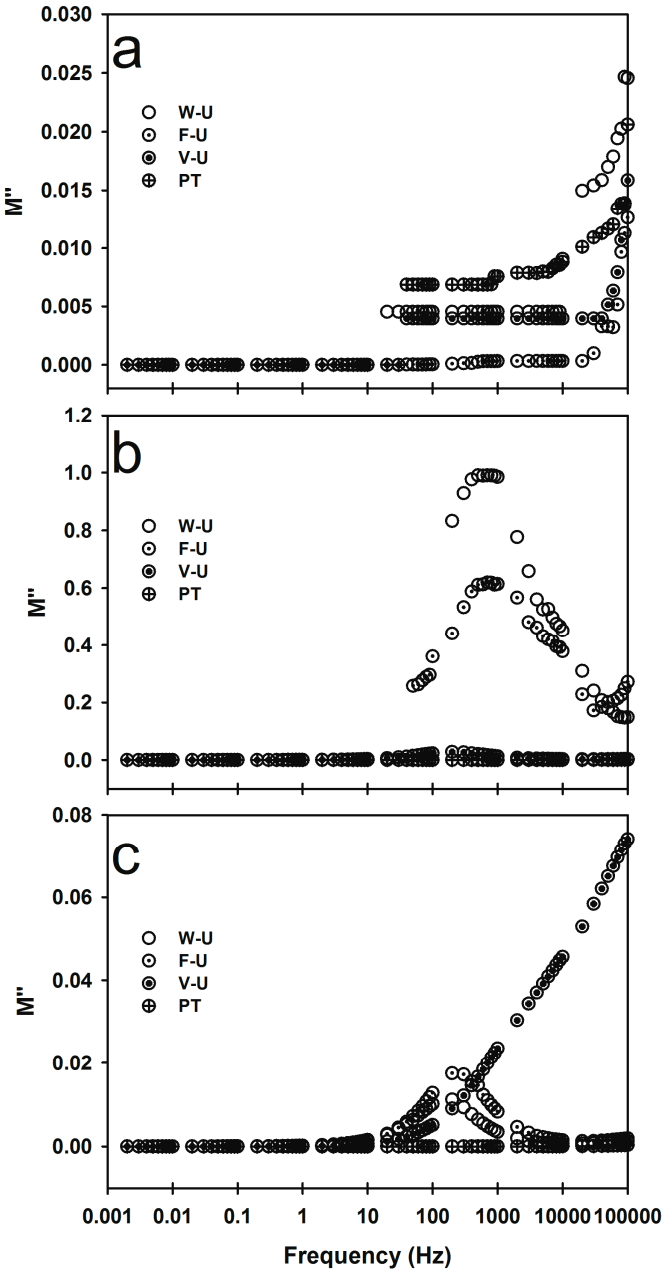


Figure S5. M″ for (**a**) iPP$_{MFI=2.5}$/MWCNT; (**b**) iPP$_{MFI=34}$/MWCNT; and (**c**) iPP$_{MFI=1200}$/MWCNT fabricated using different ultrasound-assisted extrusion methods.

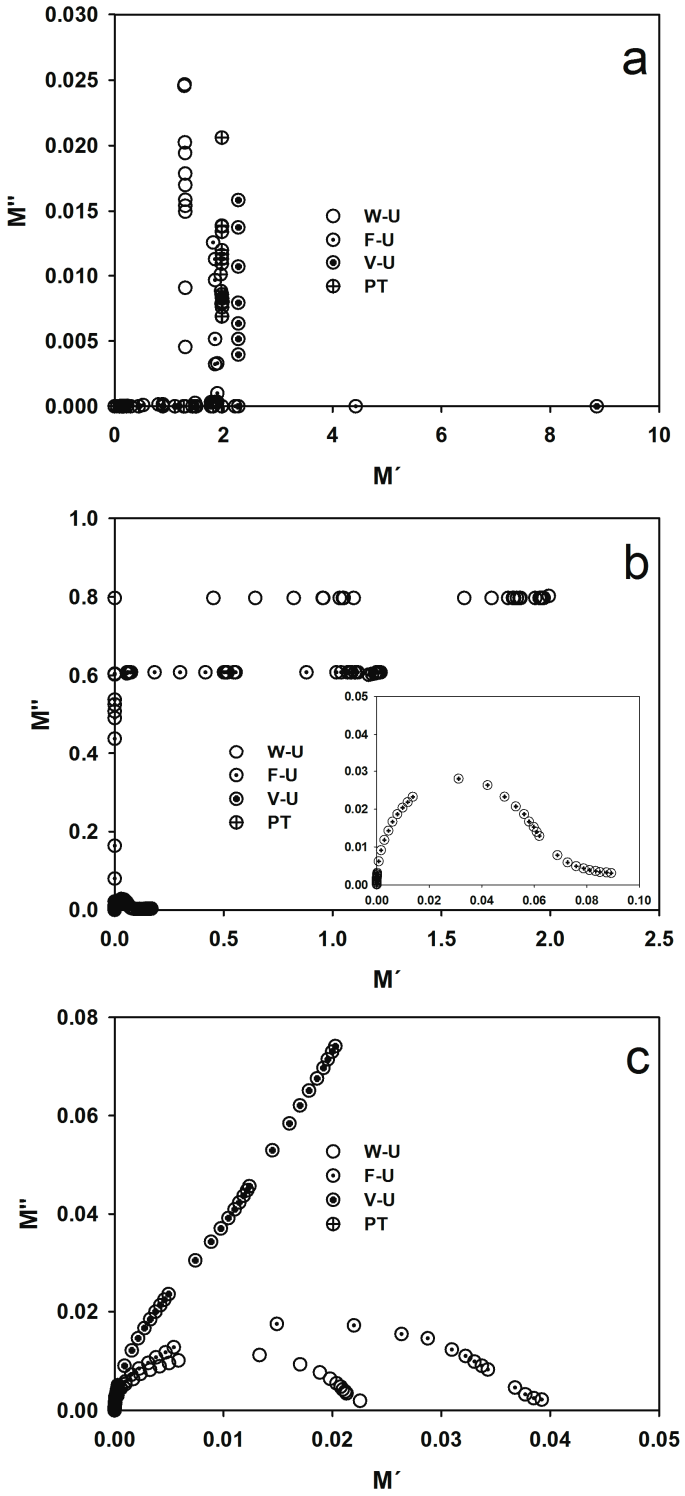
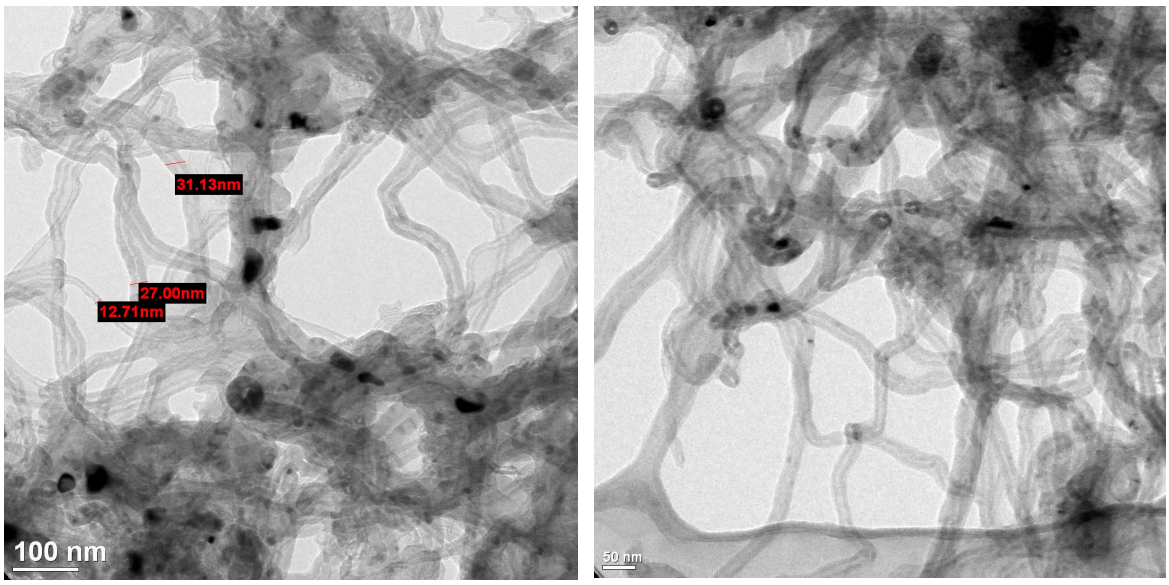


Figure S6. Electrical modulus complex plane (M″ vs. M′) for (**a**) $iPP_{MFI=2.5}$/MWCNT; (**b**) $iPP_{MFI=34}$/MWCNT; and (**c**) $iPP_{MFI=1200}$/MWCNT fabricated using different ultrasound-assisted extrusion methods.



(**a**) (**b**)

Figure S7. TEM micrographs of MWCNTs. (**a**) Lower magnifications; (**b**) Higher magnifications.