Electronic Supplementary Material (ESI) for Journal of Materials Chemistry A

Improved Supercapacitor Performance of MnO_2–Graphene Composites Constructed Using Supercritical Fluid and Wrapped by Ionic Liquid

Electronic Supplementary Information

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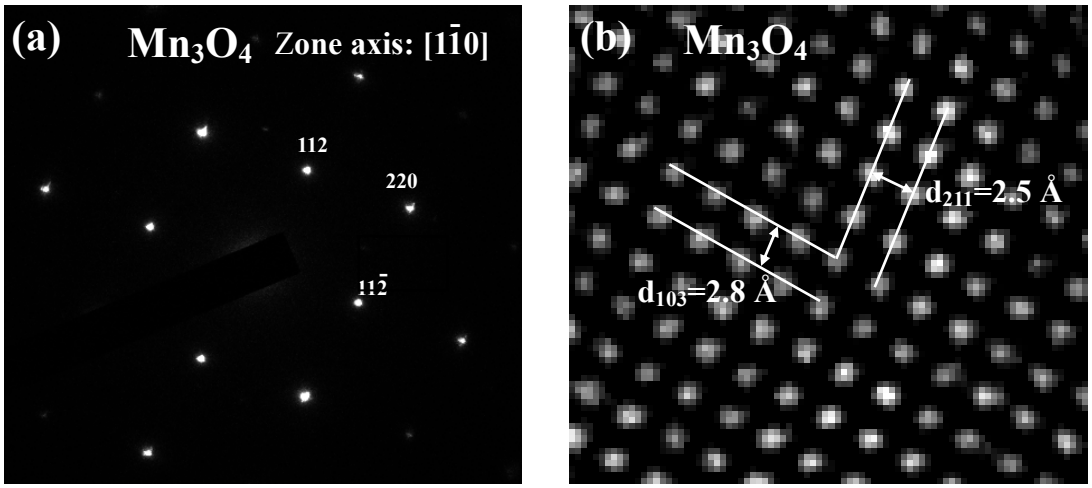

Fig. SI1. (a) Electron diffraction pattern and (b) high-resolution lattice image of a Mn_3O_4 crystal found in the sample synthesized at a CO_2 pressure of 6 MPa.

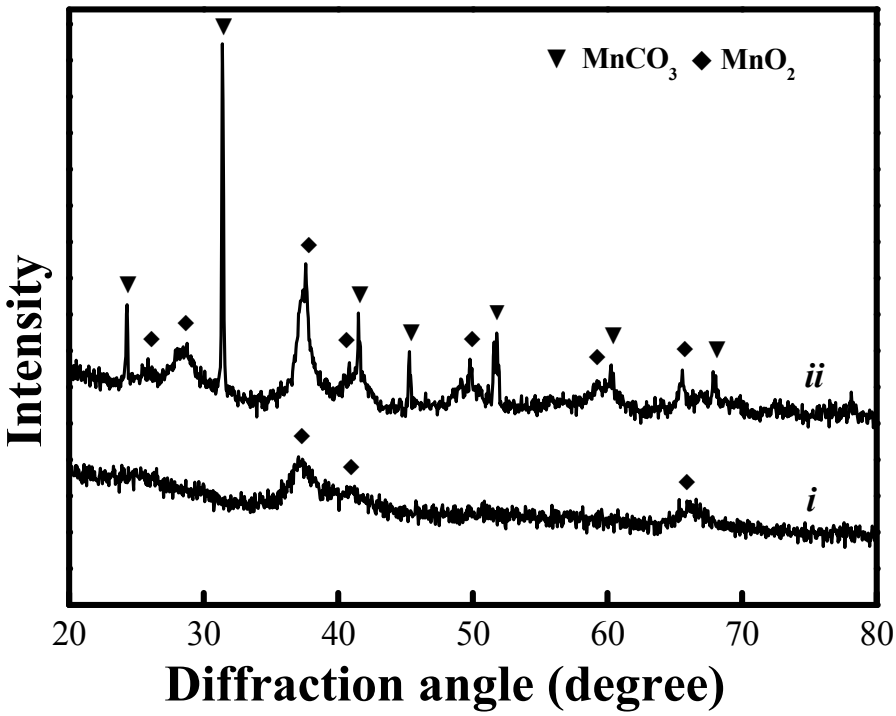

Fig. SI2. X-ray diffraction patterns of samples synthesized using 12-MPa $SCCO_2$ at 50 °C (curve *i*) and 70 °C (curve *ii*).

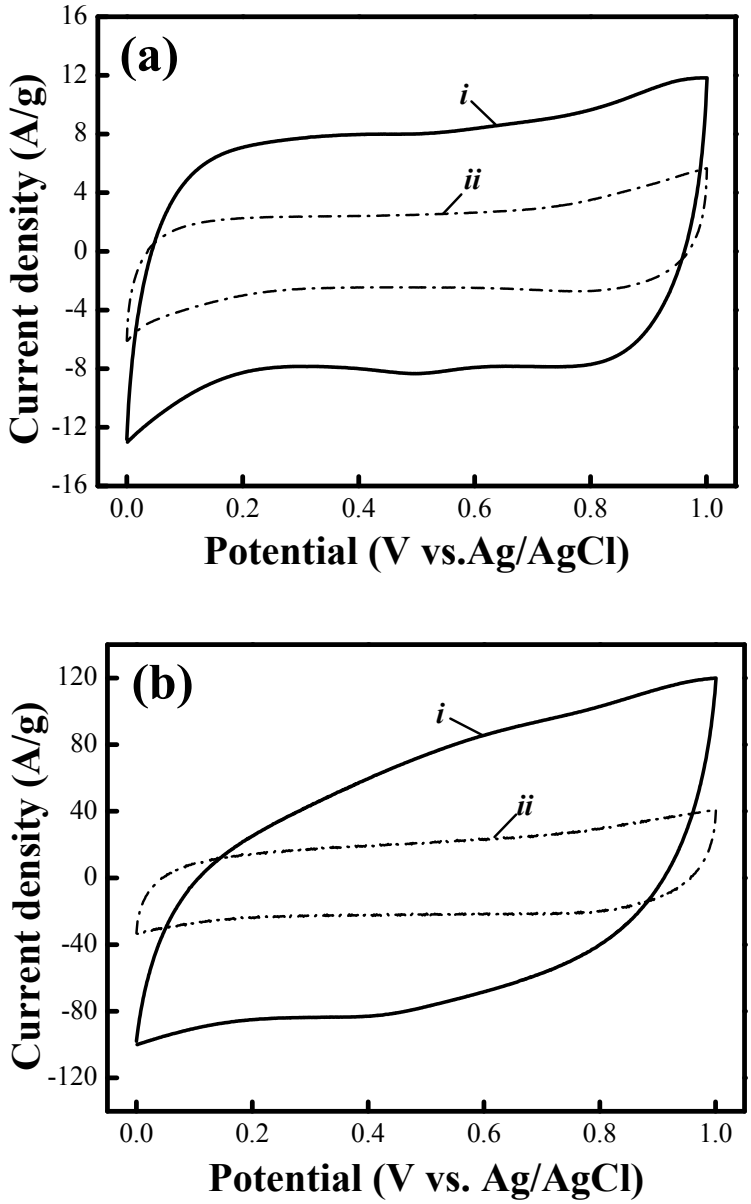

Fig. SI3. Cyclic voltammograms measured at (a) 50 mV/s and (b) 500 mV/s of samples synthesized using 12-MPa $SCCO_2$ at 50 °C (curves *i*) and 70 °C (curves *ii*).

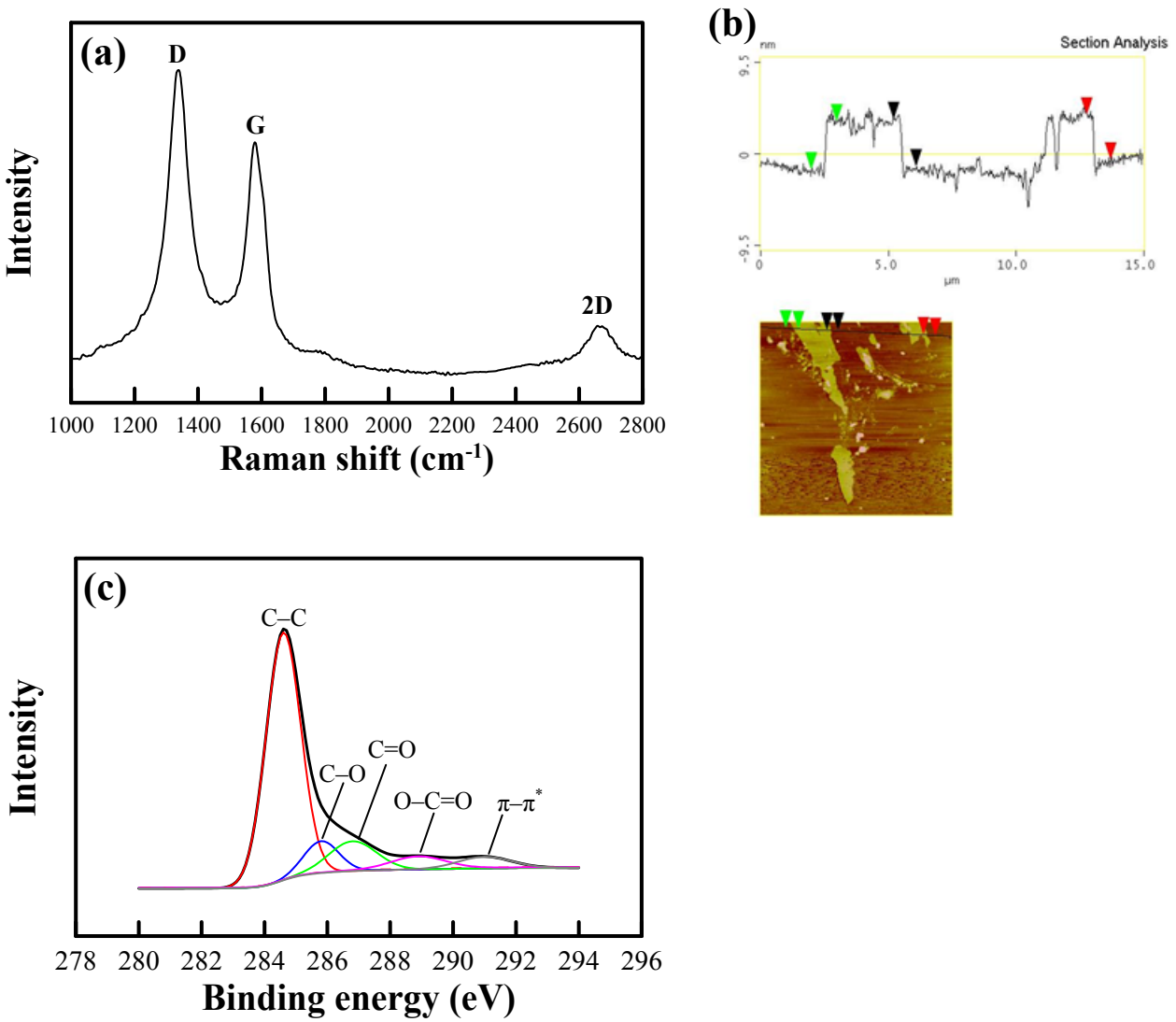

Fig. SI4. (a) Raman spectrum, (b) atomic force microscopy analysis, and (c) X-ray photoelectron spectroscopy spectrum of prepared graphene.

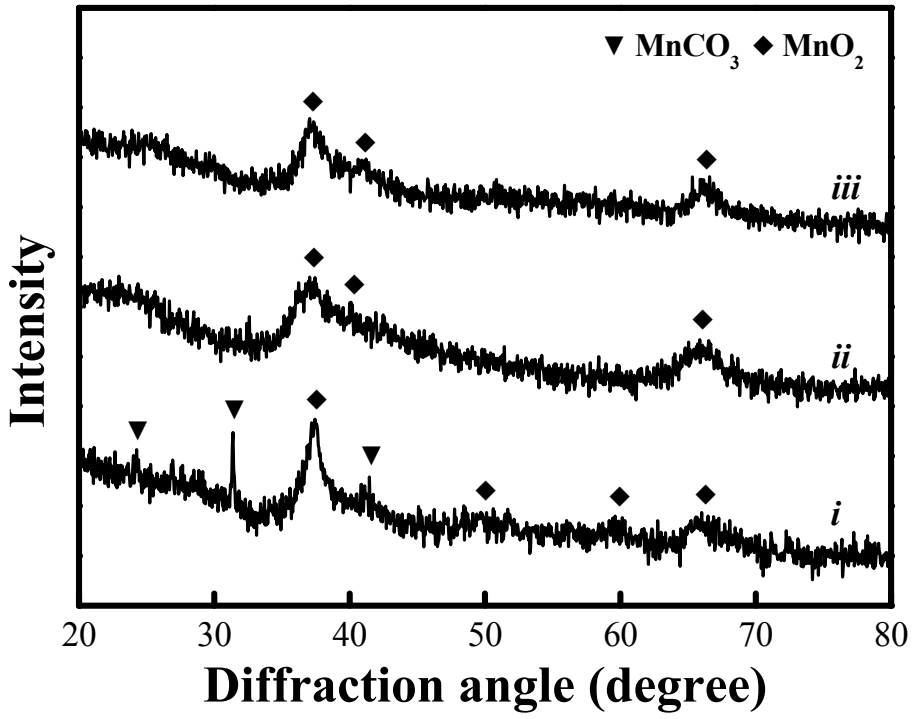

Fig. SI5. X-ray diffraction patterns of $SCCO_2$-derived MnO_2/graphene (curve *i*), air-derived MnO_2/graphene (curve *ii*), and $SCCO_2$-derived MnO_2 (curve *iii*). The synthesis time for the three samples was 3 hours.

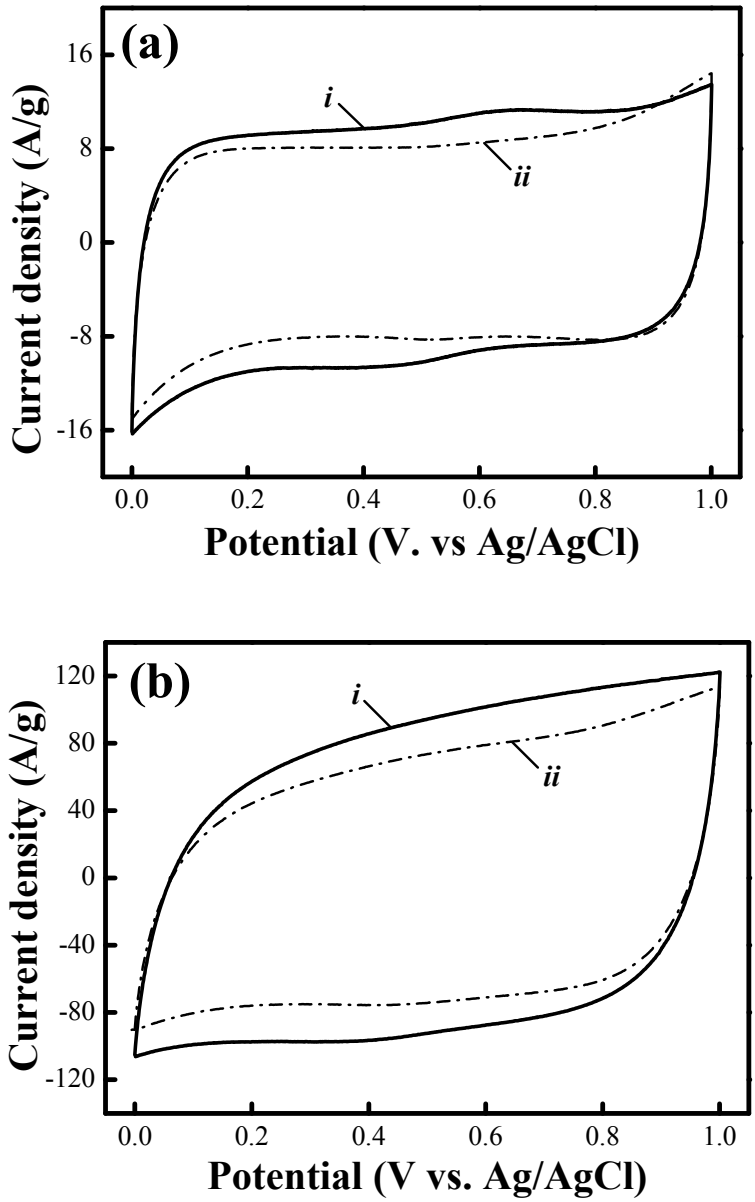

Fig. SI6. Cyclic voltammograms measured at (a) 50 mV/s and (b) 500 mV/s of $SCCO_2$-derived MnO_2/graphene electrodes with synthesis times of 0.5 hours (curves *i*) and 3 hours (curves *ii*).

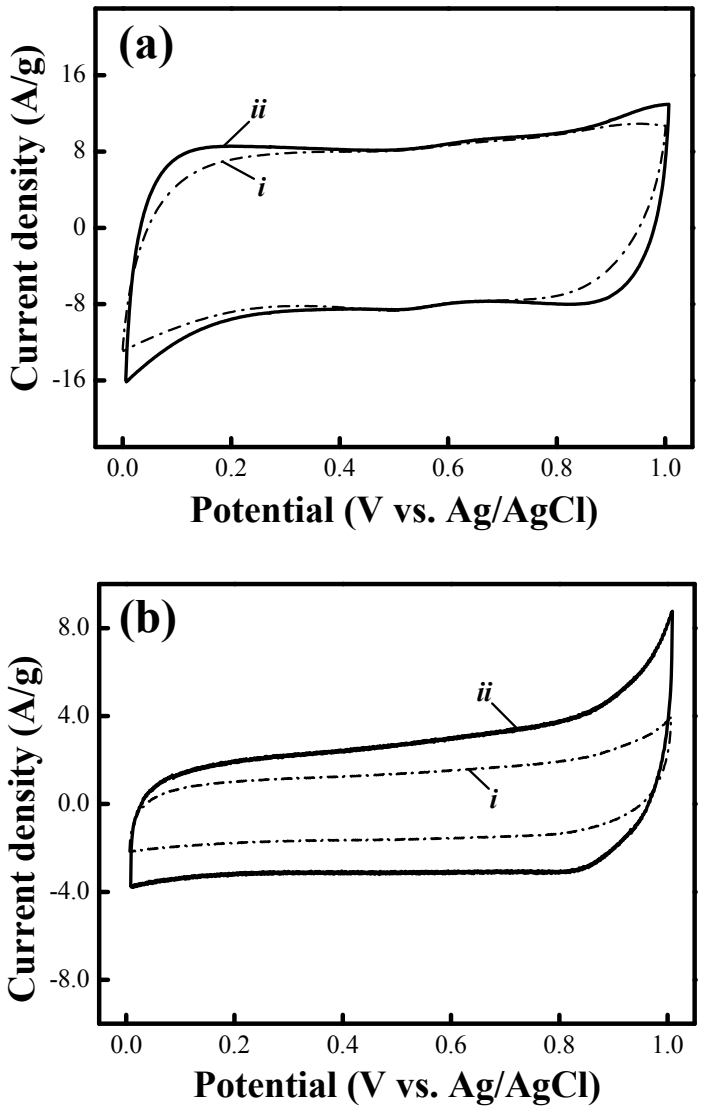

Fig. SI7. Cyclic voltammograms of (a) plain MnO_2 electrodes and (b) plain graphene electrodes without (curves *i*) and with (curves *ii*) IL wrapping measured at a potential scan rate of 50 mV/s.

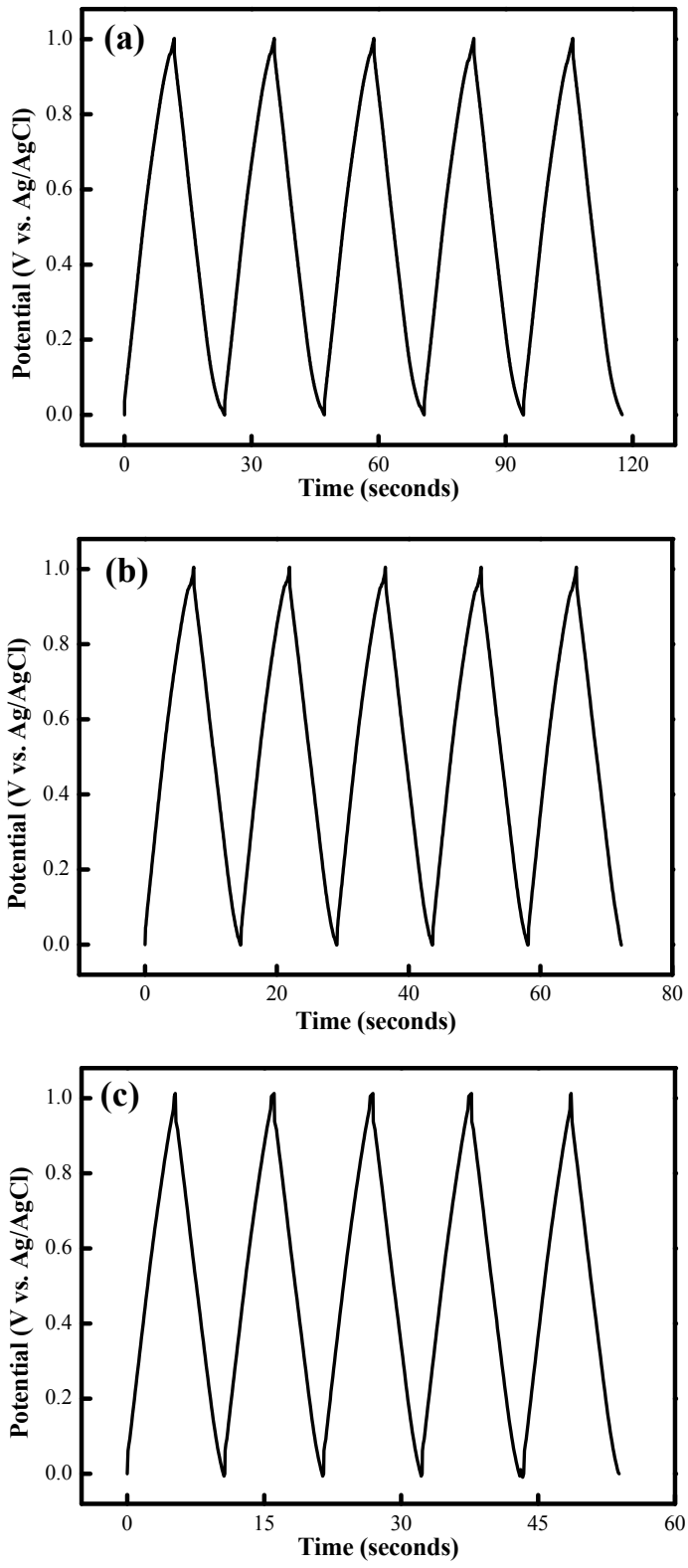

Fig. SI8. Galvanic charge–discharge curves of $SCCO_2$-MnO_2/graphene/IL measured with a two-electrode configuration at applied current densities of (a) ±10 A/g, (b) ±15 A/g, and (c) ±20A/g.