Electronic Supplementary Information

Scalable synthesis of silicon nanosheets from sand as an anode for Li-ion batteries

Won-Sik Kim, *Yoon Hwa*, *Jung-Hoo Shin*, *Myung Yang*, *Hun-Joon Sohn*, and *Seong-Hyeon Hong* *

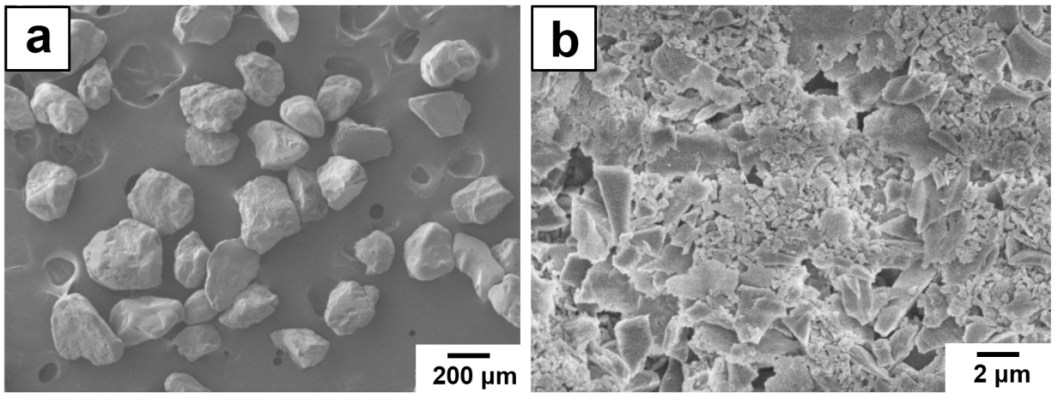
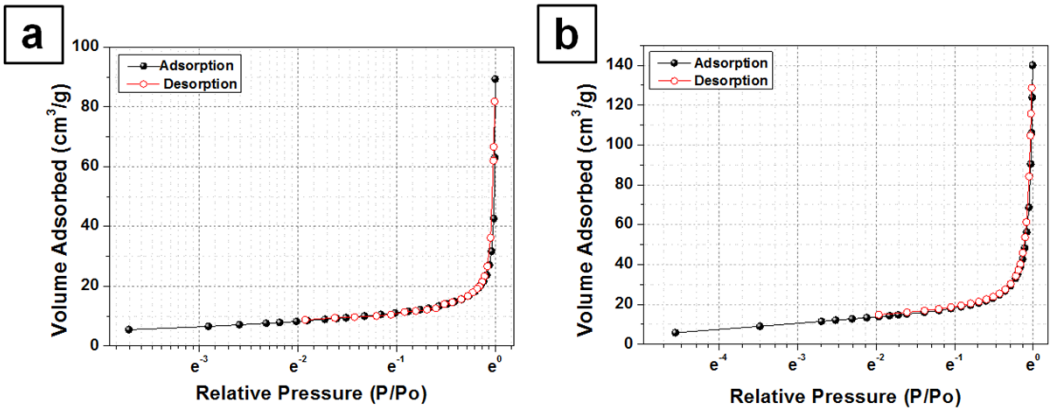


Fig. S1 SEM images of (a) commercial and (b) milled sand.



		Commercial nano-silicon	Silicon nanosheet
BET Surface Area (m^2/g)		33.7426	55.7588
Pore (m^2/g)	BJH Adsorption Surface Area of pores	27.4843	50.8200
	BJH Desorption Surface Area of pores	25.3879	49.0293

Fig. S2 (a) Nitrogen adsorption–desorption isotherms and (b) specific surface areas of commercial Si nanopowder and as-synthesized Si nanosheets.

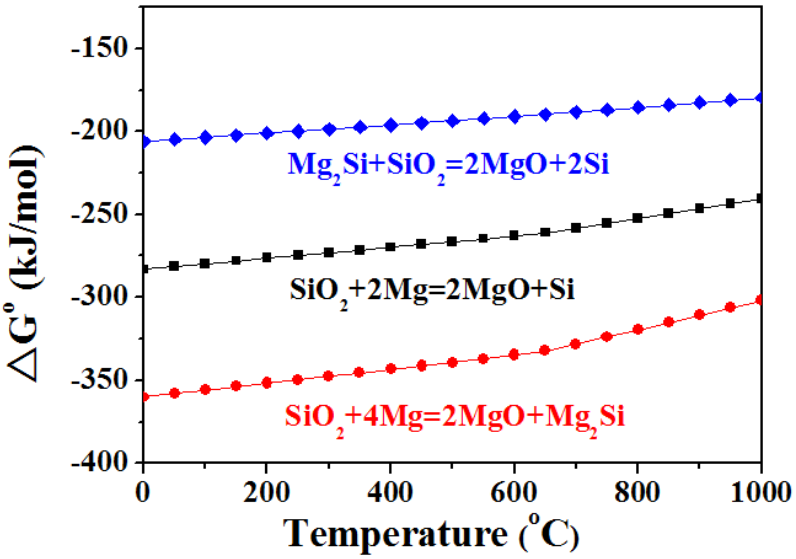


Fig. S3 Gibbs free energy of the magnesium (Mg) and magnesium silicide (Mg_2Si) reduction as a function of temperature.

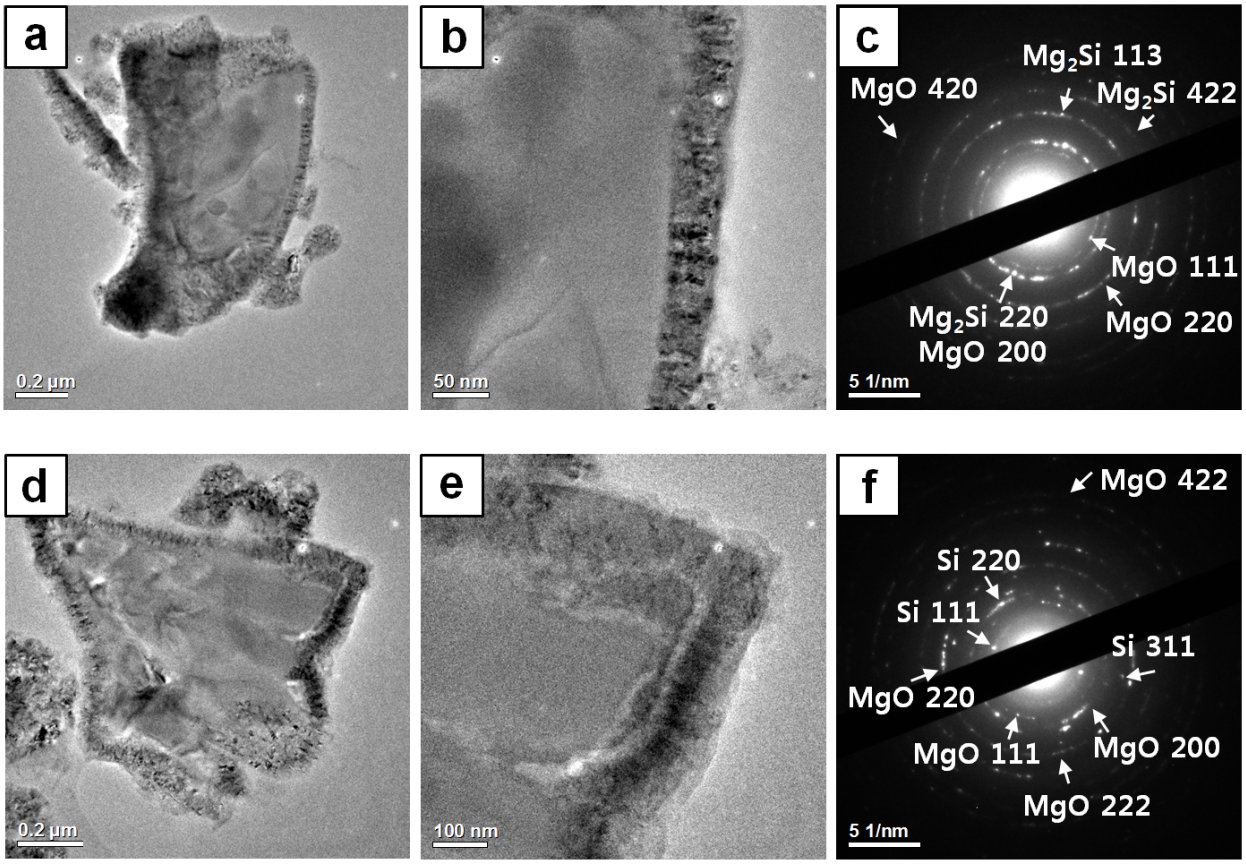


Fig. S4 Cross-sectional TEM images and SAED patterns of as-reduced specimens which were prepared by ultra-microtome. (a,b,c) and (d,e,f) are the specimens reduced at 550 and 600 °C, respectively.

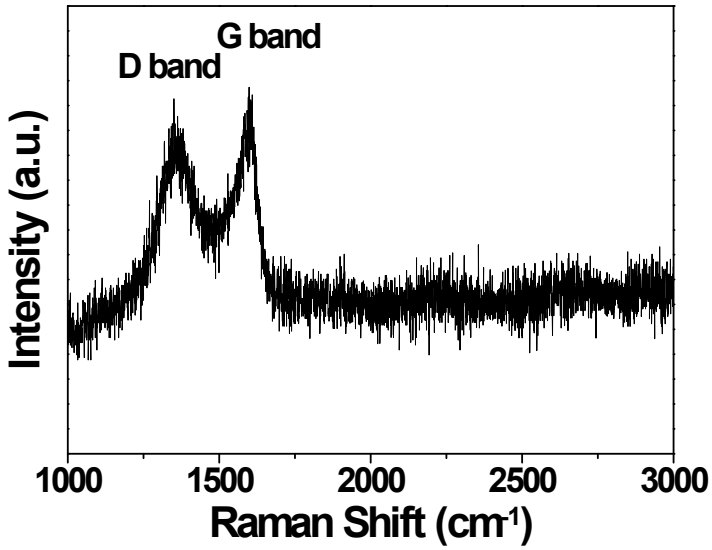


Fig. S5 The Raman spectrum of RGO-encapsulated Si nanosheets.

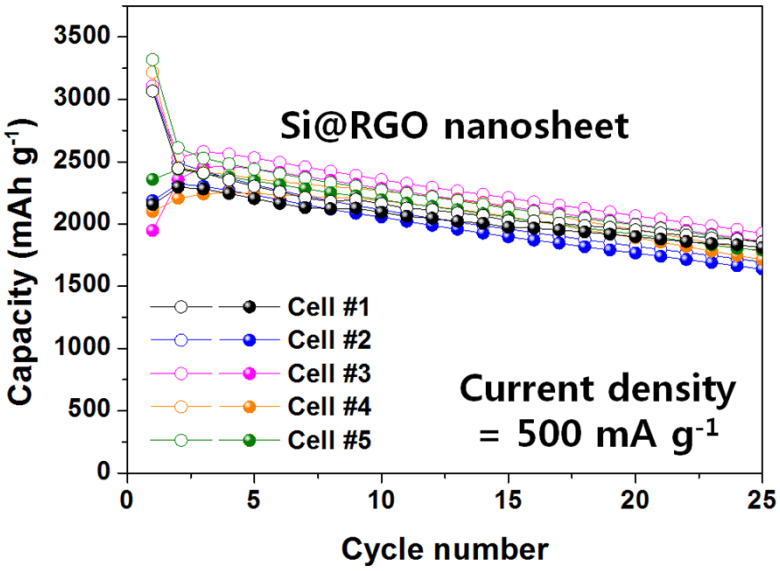


Fig. S6 Cyclability of RGO-encapsulated Si nanosheet electrode at 500 mA g^{-1}.