

(Supplementary Information)

**Insight into Microstructural and Phase Transformation in Sodiation–
Desodiation of Bismuth Particulate Anode Using In-Operando X-ray
Imaging and Diffraction Analyses**

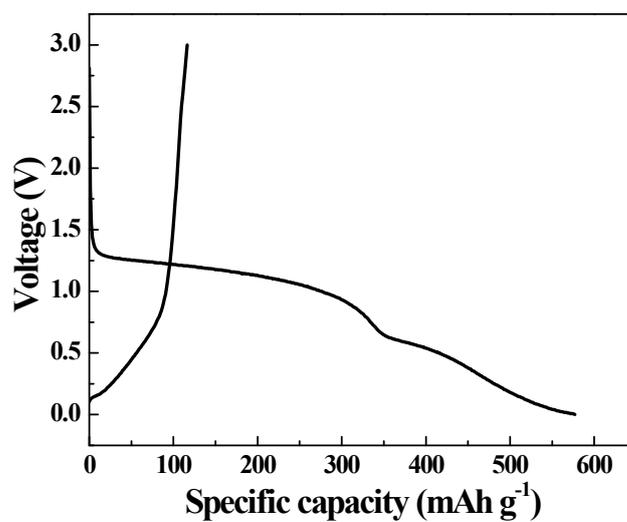


Figure S1. Voltage plot of the first-cycle of carbon black electrode.

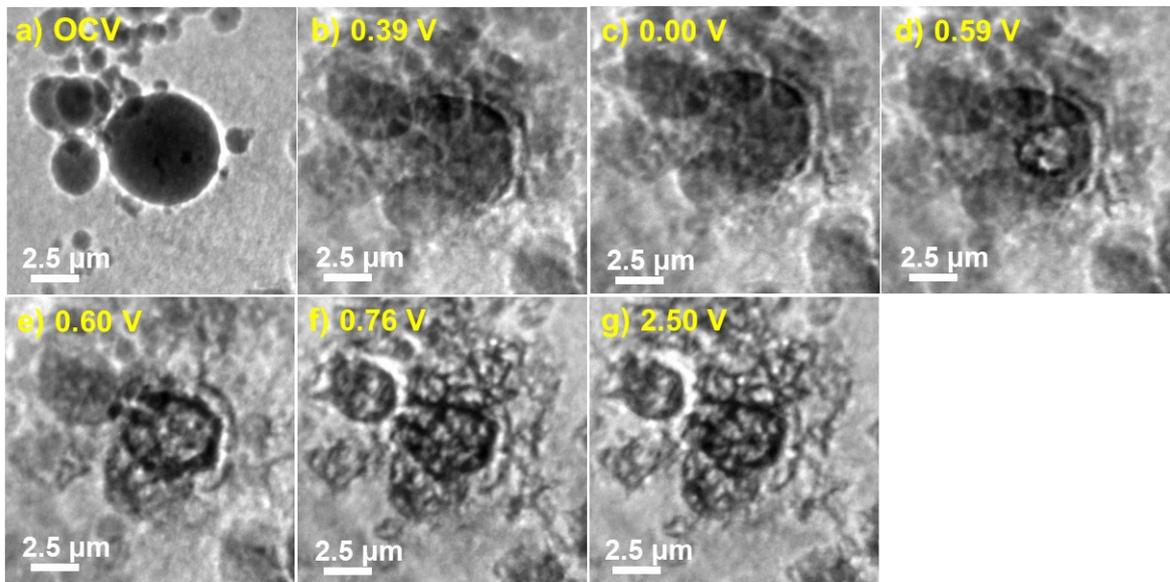


Figure S2. TXM micrographs showing the complete sodiation and desodiation processes of the Bi particles shown in Figures 4a and b

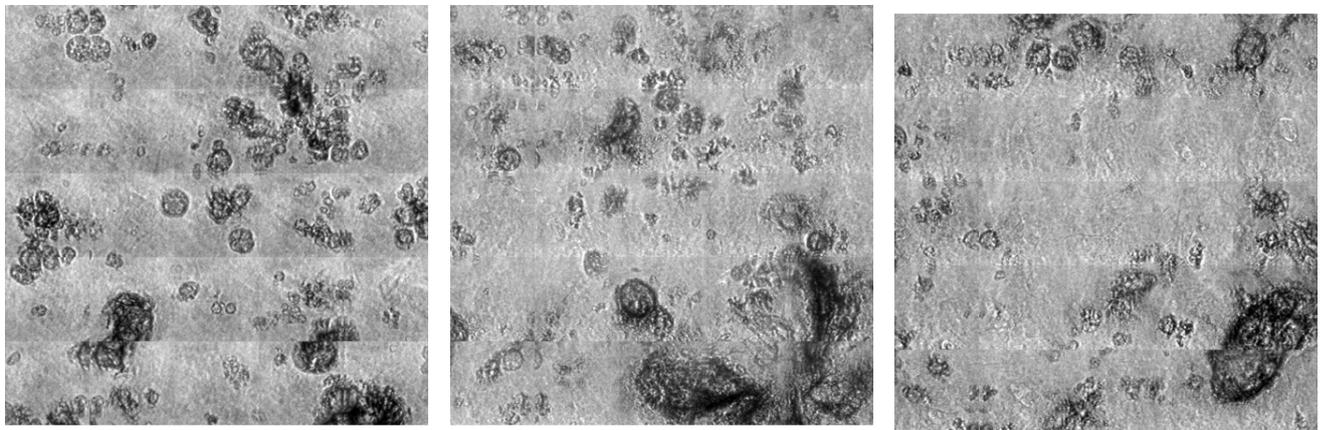


Figure S3. Large-area mosaic micrographs acquired after the first cycle desodiation of Bi micron-particle electrodes.

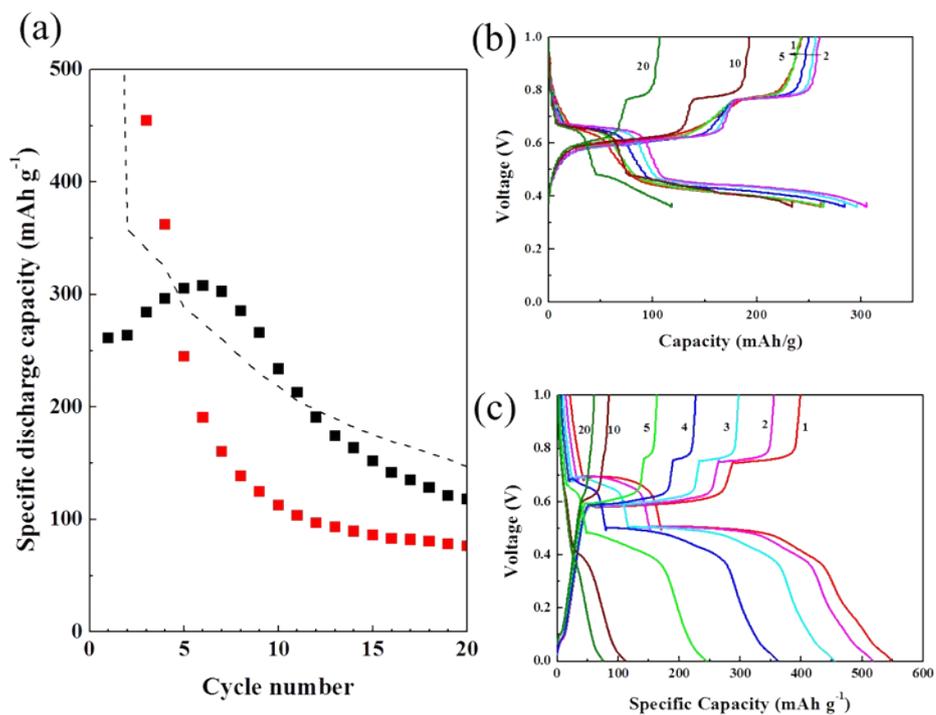


Figure S4. Effects of cut-off voltage on cycle stability of Bi micron-particle electrodes; (a) capacity versus cycle number (black: with a high cut-off voltage (0.36 V) that limited the initial capacity to 250 mAh g⁻¹; red: zero-volt cut-off voltage; dashed line: data from reference #24 for a nano-particle electrode with a cut-off voltage of 0.3 V); (b) voltage plots for cycles with the high cut-off voltage; (c) voltage plots for cycles with the zero-volt cut-off voltage.