

Supporting Information for

**Synthesis and Electrochemical Properties of $\text{Li}_{1.3}\text{Nb}_{0.3}\text{V}_{0.4}\text{O}_2$ as a Positive Electrode Material for
Rechargeable Lithium Batteries**

Naoaki Yabuuchi,^{1*} Mitsue Takeuchi,² Shinichi Komaba,² Shinnosuke Ichikawa,³

Tetsuya Ozaki³ and Tokuo Inamasu³

¹Department of Green and Sustainable Chemistry, Tokyo Denki University

5 Senju Asahi-Cho, Adachi, Tokyo 120-8551, Japan

²Department of Applied Chemistry, Tokyo University of Science,

1-3 Kagurazaka, Shinjuku, Tokyo 162-8601, Japan

³R&D Center, GS Yuasa International Ltd.,

1 Inobanba-cho, Nishinosho, Kisshoin, Minami-ku, Kyoto 601-8520, Japan

*corresponding author, e-mail; yabuuchi@mail.dendai.ac.jp

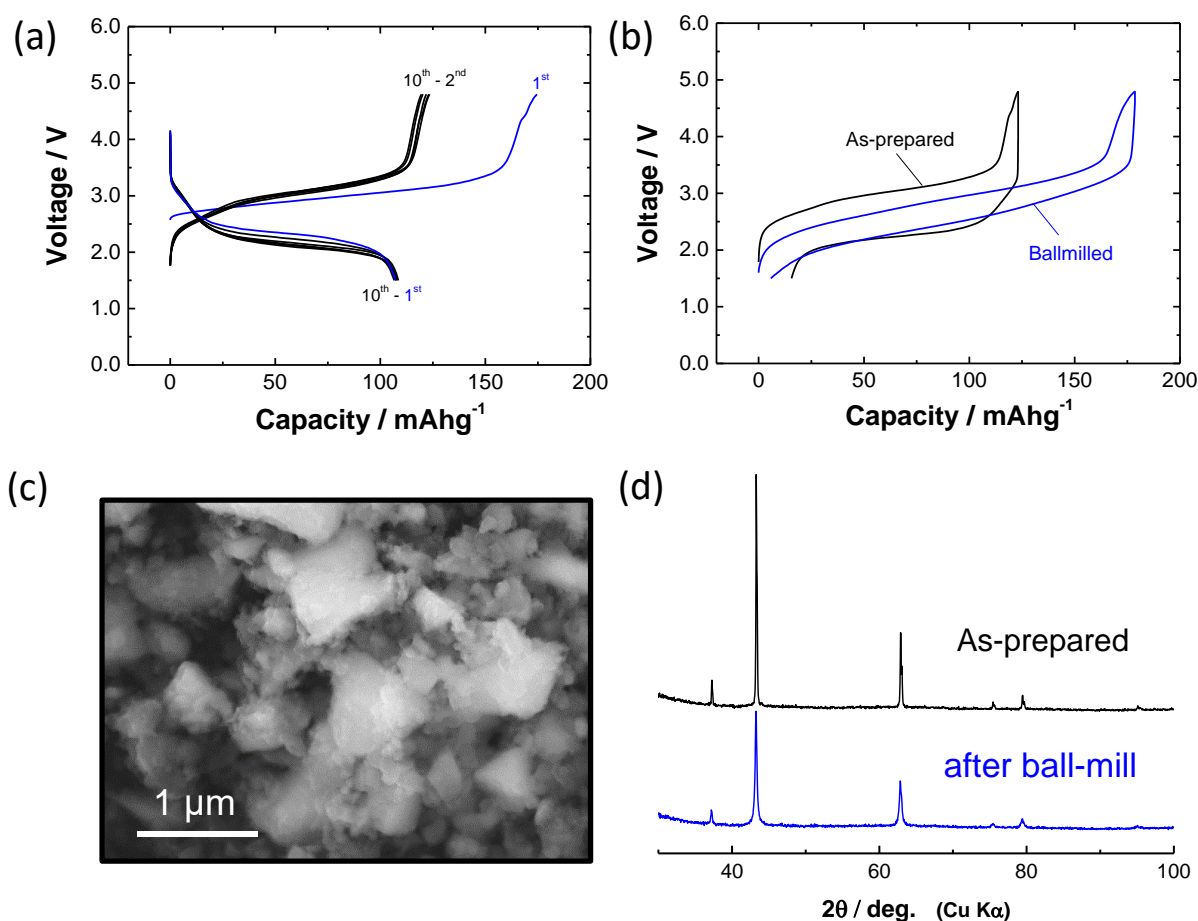


Figure S1. (a) Electrode performance of as-prepared $\text{Li}_{1.3-x}\text{Nb}_{0.3}\text{V}_{0.4}\text{O}_2$ without the ballmilling process. The Li cell was cycled in the voltage range of 1.5 – 4.8 V at a rate of 10 mA g⁻¹ at room temperature. Electrode performance of as-prepared and ballmilled $\text{Li}_{1.3-x}\text{Nb}_{0.3}\text{V}_{0.4}\text{O}_2$ is compared in (b). Charge/discharge curves for 2nd cycles are shown in (b). (c) Particle morphology of ball-milled sample observed by SEM. Particle size was reduced from approximately 3 – 5 μm to sub-micrometer size. Uniform distribution of nanosized carbon is also noted. Polarization as electrode materials is effectively enhanced by mechanical ball-milling as shown in (b). (d) Comparison of XRD patterns of $\text{Li}_{1.3-x}\text{Nb}_{0.3}\text{V}_{0.4}\text{O}_2$ before and after ball-milling with carbon. Particle size and crystallinity of the sample are lowered by ball-milling process.