

Supplementary Material (ESI) for Energy & Environmental Science

Electronic Supplementary Information

**Anomalous Decrease in Structural Disorder by Charge Redistribution
in Cr-doped $\text{Li}_4\text{Ti}_5\text{O}_{12}$ Negative-electrode Materials for High-rate Li-ion Batteries**

Hannah Song,^a Su-Won Yun,^a Ho-Hwan Chun,^b Min-Gyu Kim,^c Kyung Yoon Chung,^d Hyung Sun Kim,^d Byung-Won Cho^d and Yong-Tae Kim^{*a}

^a *Energy System Major, School of Mechanical Engineering, Pusan National University, Busan 609-735, Korea. Fax: +82 51 514 0685; Tel: +82 51 510 1012; E-mail: yongtae@pusan.ac.kr*

^b *Global Core Research Center for Ships and Offshore Plants (GCRC-SOP), Pusan National University, Busan 609-735, Korea.*

^c *Beamline Research Division, Pohang Accelerator Laboratory (PAL), Pohang 790-784, Korea.*

^d *Advanced Battery Center, Korea Institute of Science and Technology (KIST), Seoul 130-650, Korea.*

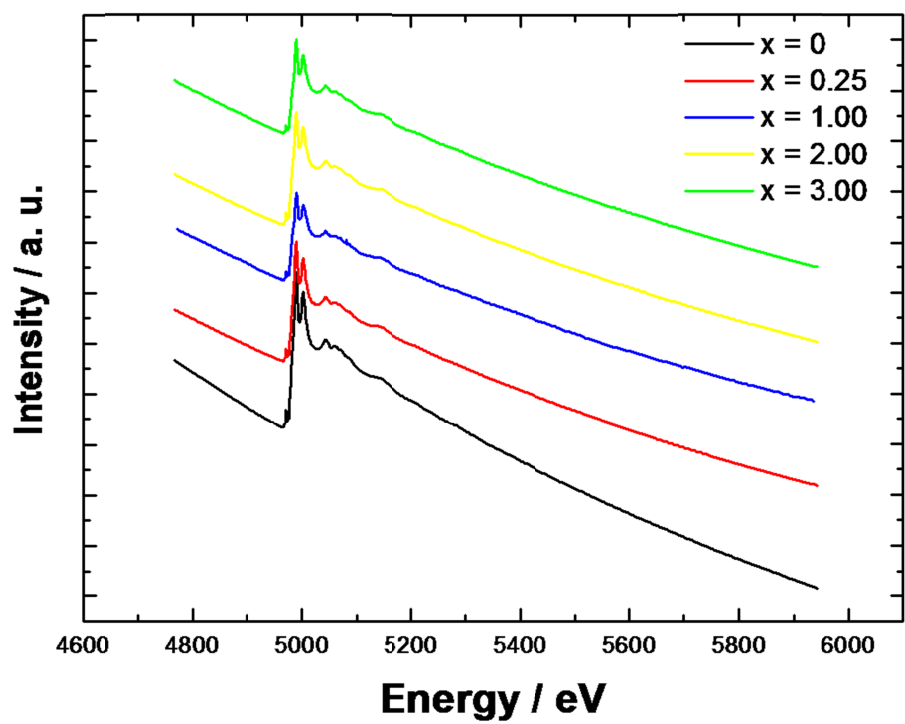


Fig. S1. Raw XAS data of $\text{Li}_{4-x/3}\text{Ti}_{5-2x/3}\text{Cr}_x\text{O}_{12}$

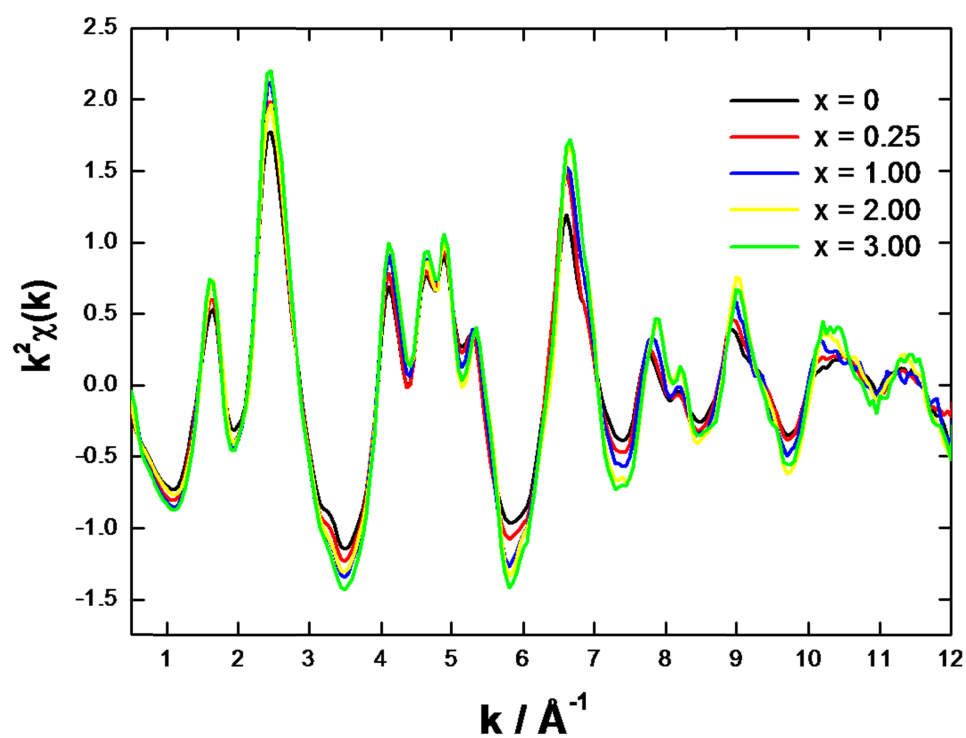


Fig. S2. Spline range of $\text{Li}_{4-x/3}\text{Ti}_{5-2x/3}\text{Cr}_x\text{O}_{12}$ in background removal

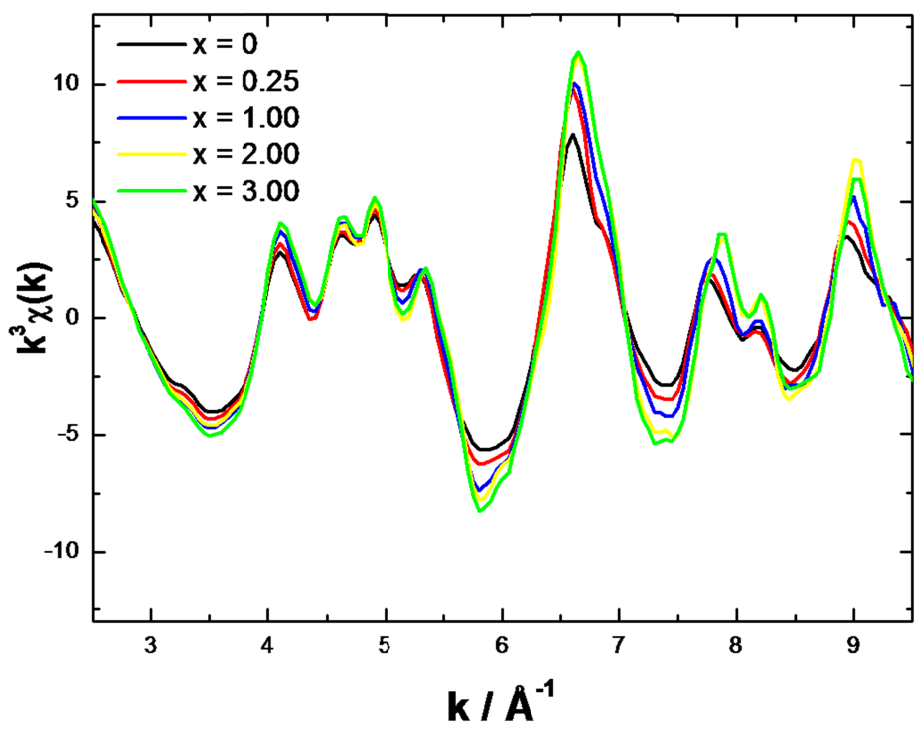


Fig. S3. Extraction of EXAFS signal of $\text{Li}_{4-x/3}\text{Ti}_{5-2x/3}\text{Cr}_x\text{O}_{12}$ for the Fourier Transform

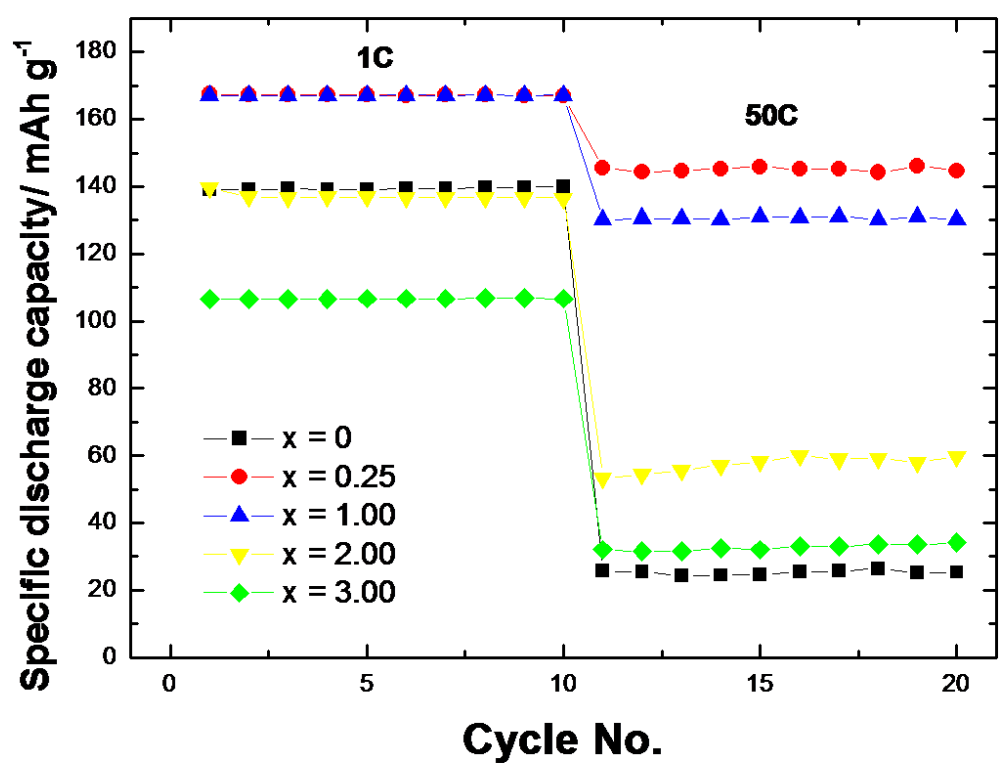


Fig. S4. Rate capability of $\text{Li}_{4-x/3}\text{Ti}_{5-2x/3}\text{Cr}_x\text{O}_{12}$ at 1C-rate charge.