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

Mesoporous Lithium Vanadium Oxide as Thin Film Electrode for Lithium-Ion Batteries: Comparison between Direct Synthesis of LiV_2O_5 and Electrochemical Lithium Intercalation in V_2O_5 – Supplementary Informations

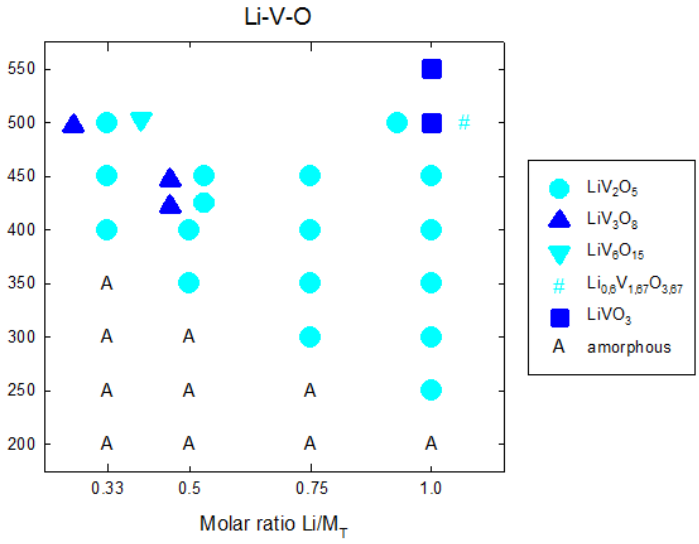

Fig. S1 X-Ray Diffraction (XRD) summary of crystalline phases obtained for different Li/V molar ratio in function of the temperature.

X-Ray Photoelectron Spectroscopy (XPS) data and spectra were carry out in a Kratos Axis Ultra spectrometer equipped with a monochromatized aluminium X-ray source powered at 10 mA and 15 kV; calibration of the binding energy scale was set by fixing the **C**-(C,H) peak at 284.8 eV; special care was taken to avoid vanadium reduction under vacuum.

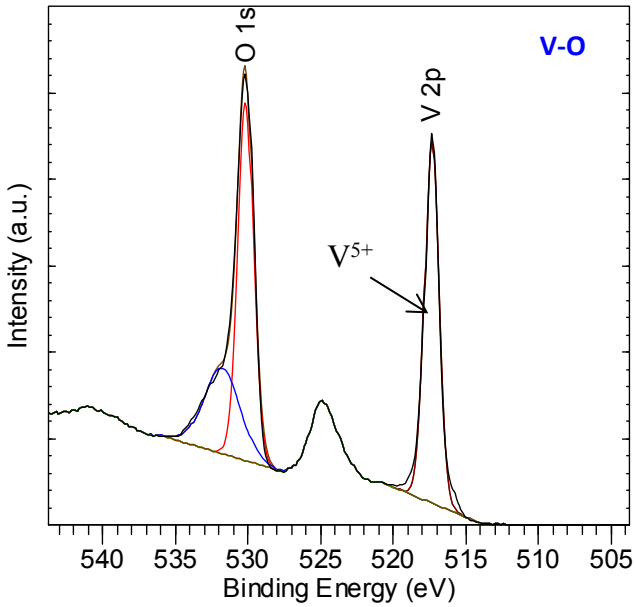

Fig. S2 X-Ray Photoelectron Spectroscopy (XPS) spectra of V-O (350°C-30min) MTFs.

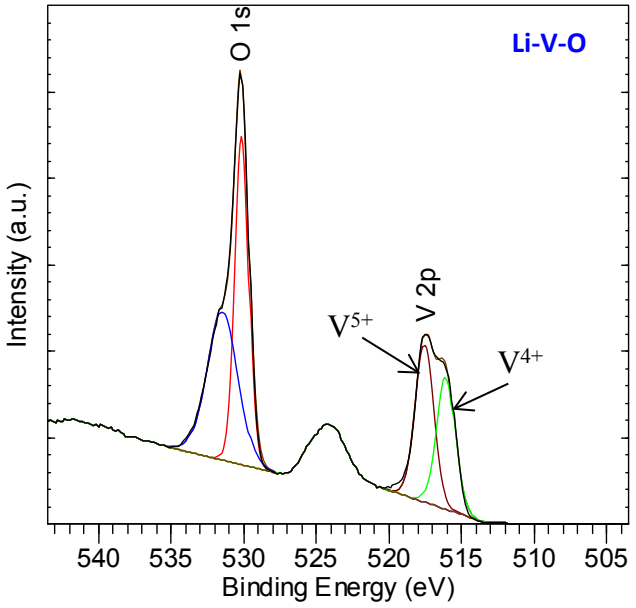

Fig. S3 X-Ray Photoelectron Spectroscopy (XPS) spectra of Li-V-O (400°C-1min) MTFs.

Table S1. X-Ray Photoelectron Spectroscopy (XPS) data of Li-V-O (400°C-1min) MTFs and V-O (350°C-30min) MTFs.

	V^{4+} (%)	V^{5+} (%)
Li-V-O (400°C-1min) (1)	46	54
Li-V-O (400°C-1min) (2)	43	57
V-O (350°C-30min)	0	100

Grazing Incidence Small Angle X-Ray Scattering (GISAXS) horizontal line profiles were performed at beam line 7.3.3 at the Advanced Light Source, Lawrence Berkeley National Technology, using an X-Ray of 0.123984 nm wavelength. An ADSC Quantum 4R detector was used and the detector distance set at 3.8 meters.

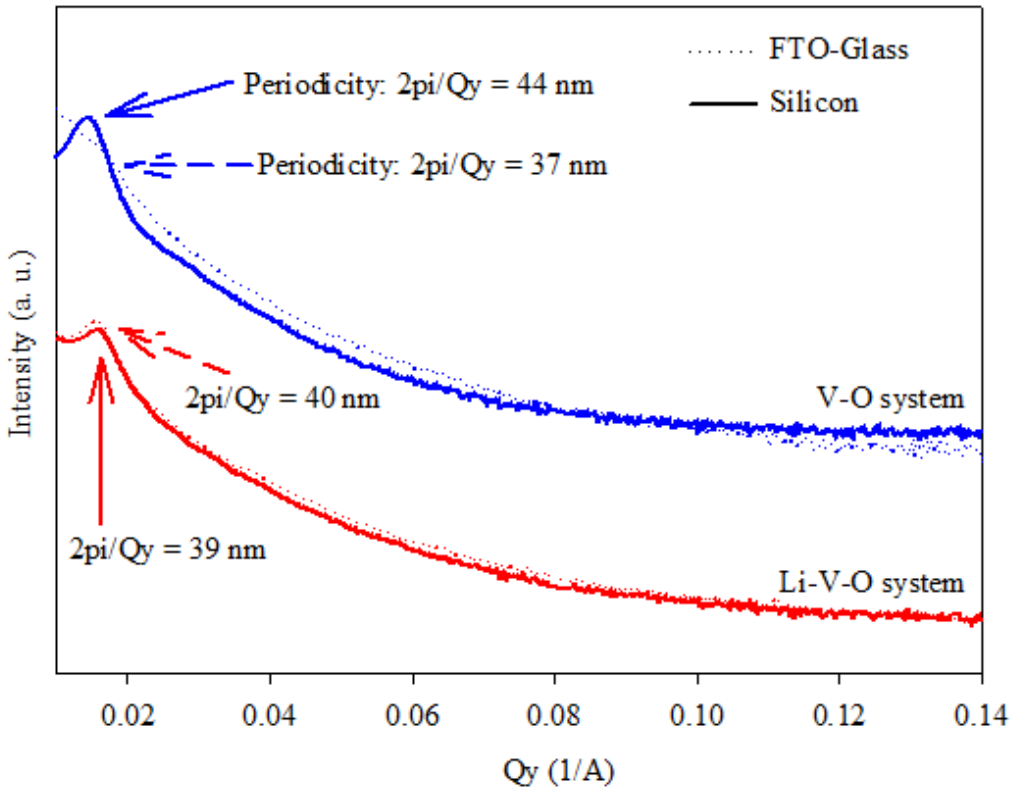

Fig. S4 Grazing Incidence Small Angle X-Ray Scattering (GISAXS) horizontal line profiles of V-O and Li-V-O films deposited on silicon and FTO-Glass substrates.

Scanning Electron Micrographs were recorded on a Zeiss Gemini Ultra-55 Analytical Scanning Electron Microscope using a beam energy of 5 kV and an In-Lens detector.

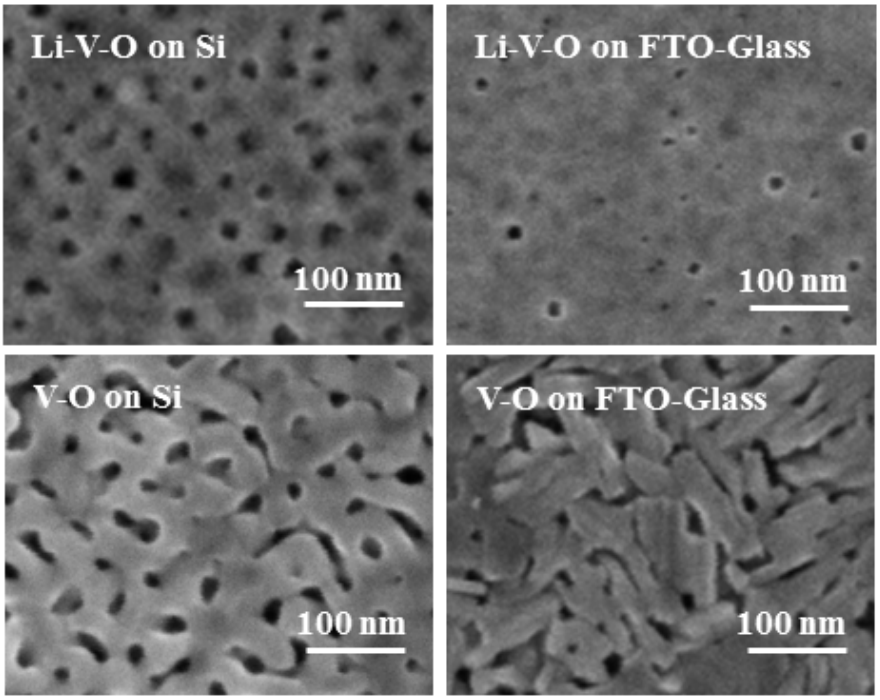

Fig. S5 SEM micrographs of the surface of Li-V-O and Li-V-O deposited on silicon and FTO-glass substrate.

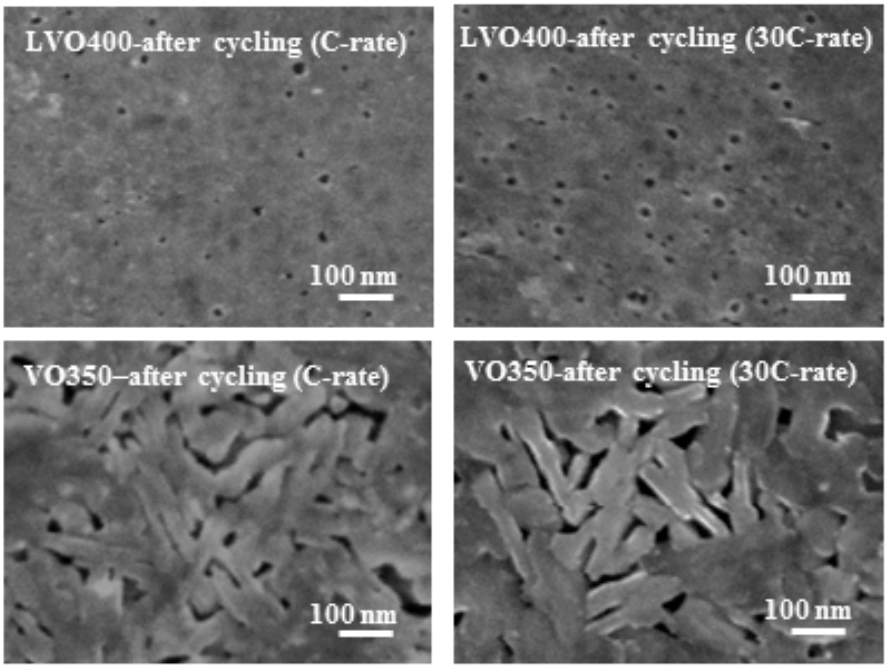

Fig. S6 SEM micrographs of the surface of *VO350* and *LVO400* after electrochemical cycling.