

Supporting Information:

Morphology and Mesopores in Photoelectrochemically Active LaTiO₂N Single Crystals

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STEM-image of the shortest (=out of plane) axis of the LTO platelets (FIG. S1). LTON particle with elongated pores viewed in [210] direction (FIG. S2). HAADF-STEM image and HREM image of porous region in SS-LTON (FIG. S3). Projection of a monocrystalline LTON particle in [210] direction (FIG. S4). This material is available free of charge via the internet.

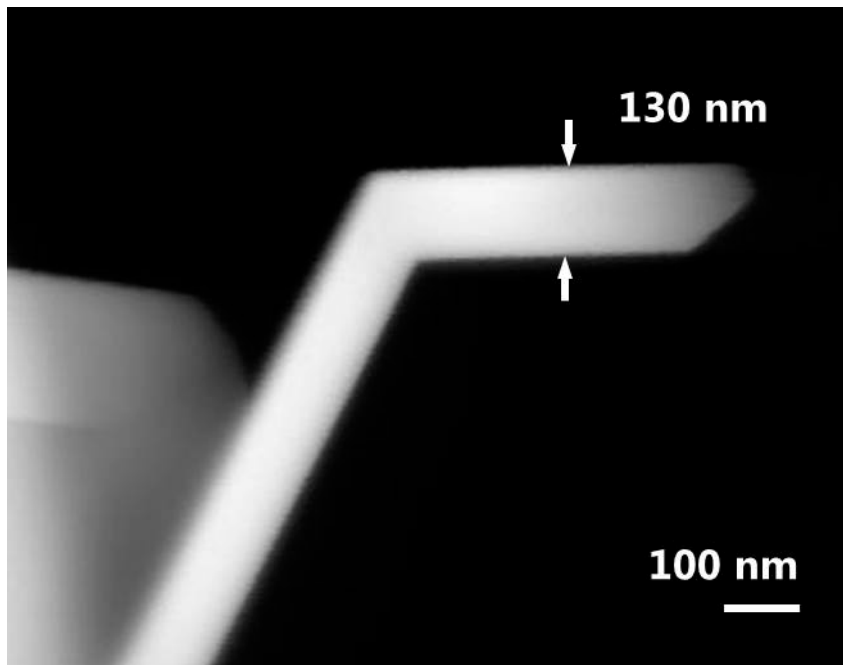


FIG. S1. STEM-image of the shortest axis of the LTO platelets. The LTO particle has been deposited with a high tilt angle onto the TEM grid. The measured thickness is 130 nm.

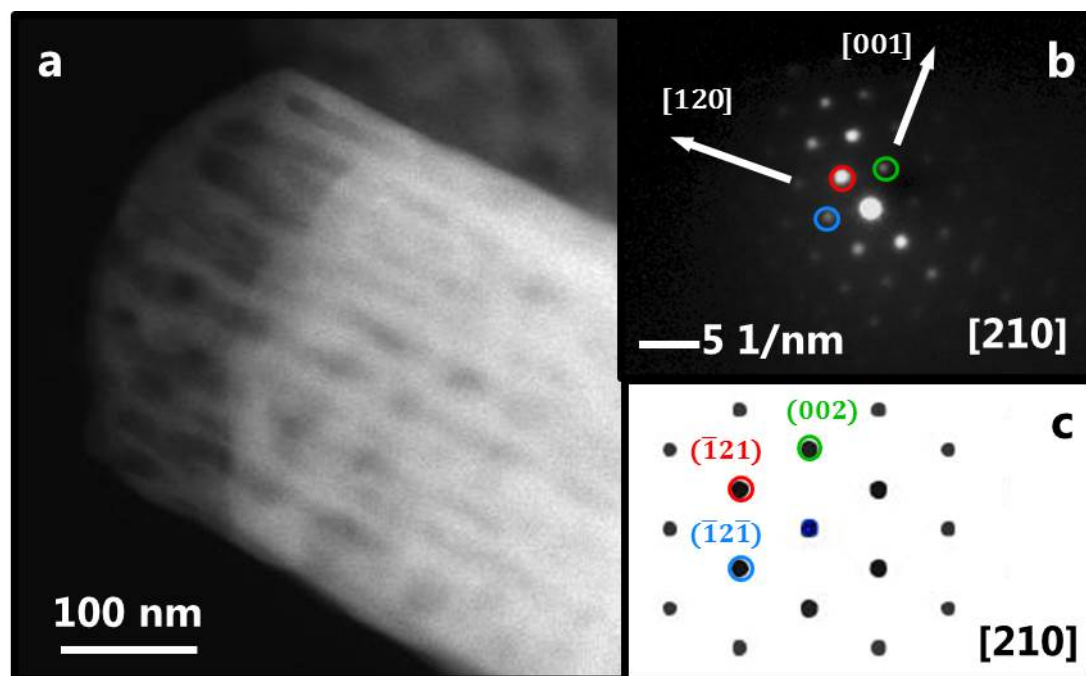


FIG. S2. LTON Particle with elongated pores viewed in $[210]$ direction. (a) HAADF-STEM image with the corresponding SAD pattern (b) and the simulated diffraction pattern (c). Elongated pores with around 14 nm in width were observed. The augmentation of the HAADF signal intensity (strong white contrast) in $[\bar{1}20]$ direction is an indication for sample thickness increase.

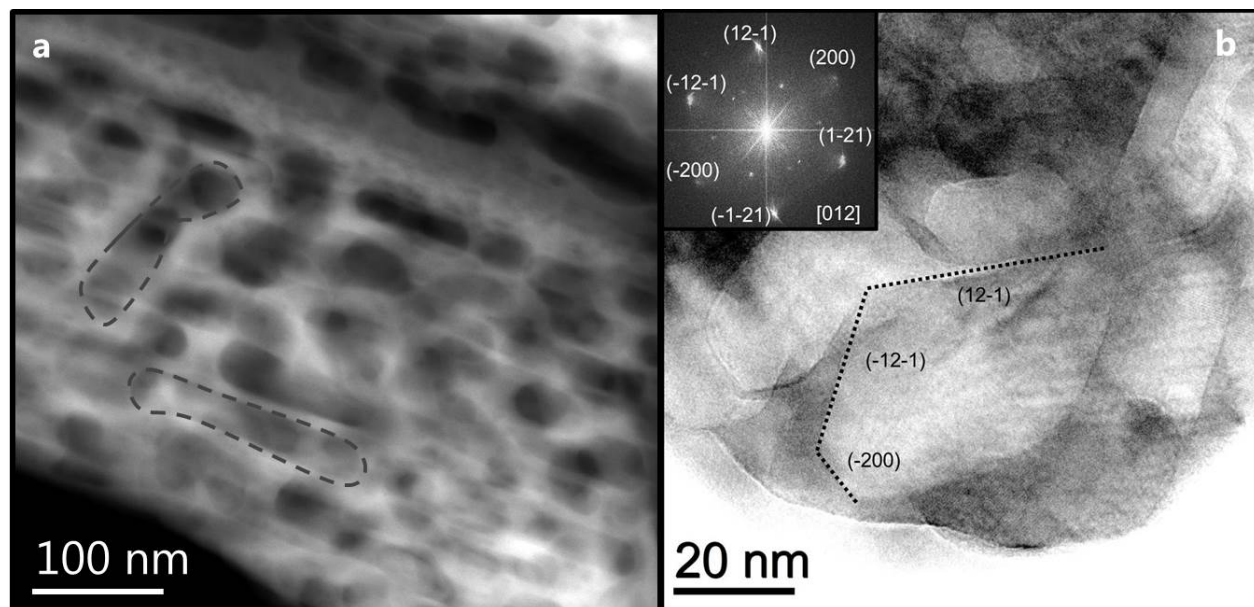


FIG. S3. HAADF-STEM image (a) of a mesoporous area. The lines indicate pores shapes with elongations forming a 60° angle. (b) HREM image of the edge of a SS-LTON particle. The inset in (b) corresponds to the FFT of the total image area proving that the entire image area is a single crystal with hexagonally shaped mesopores.

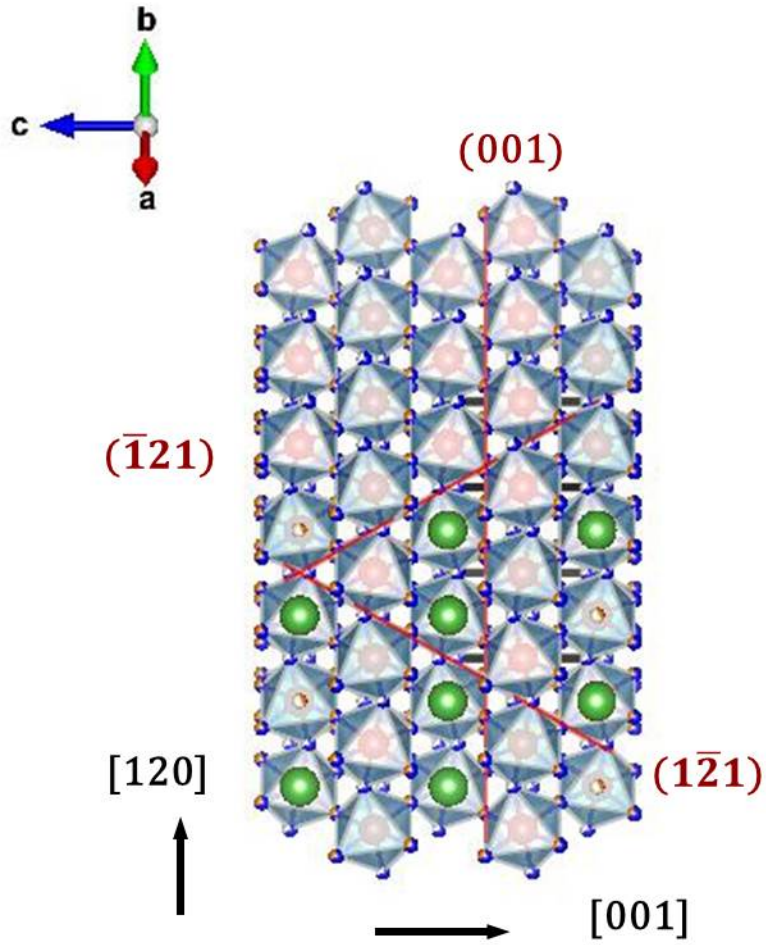


FIG. S4. Projection of a typically-shaped monocrystalline LTON particle in $[210]$ direction consisting of three unit cells in $[001]$, two unit cells in $[010]$ and two unit cells in $[001]$ direction. Green spheres indicate the La positions, blue spheres the O positions and orange spheres the N positions; the red spheres in the center of the octahedral coordination polyhedron are Ti atom. The red lines indicate the pore wall planes. The overall particle shape is represented very well compared to FIG. S2(a) including the thickness increase in $[\bar{1}20]$ represented by the augmentation of the number of unit cells.