

Supplementary Information

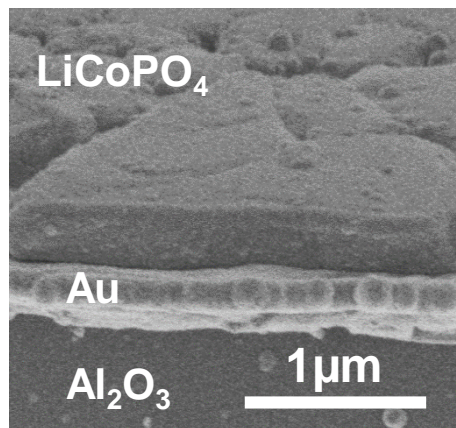


Fig. S1 Scanning electron micrograph of the $\text{LiCoPO}_4/\text{Au}/\text{Al}_2\text{O}_3$ thin film.

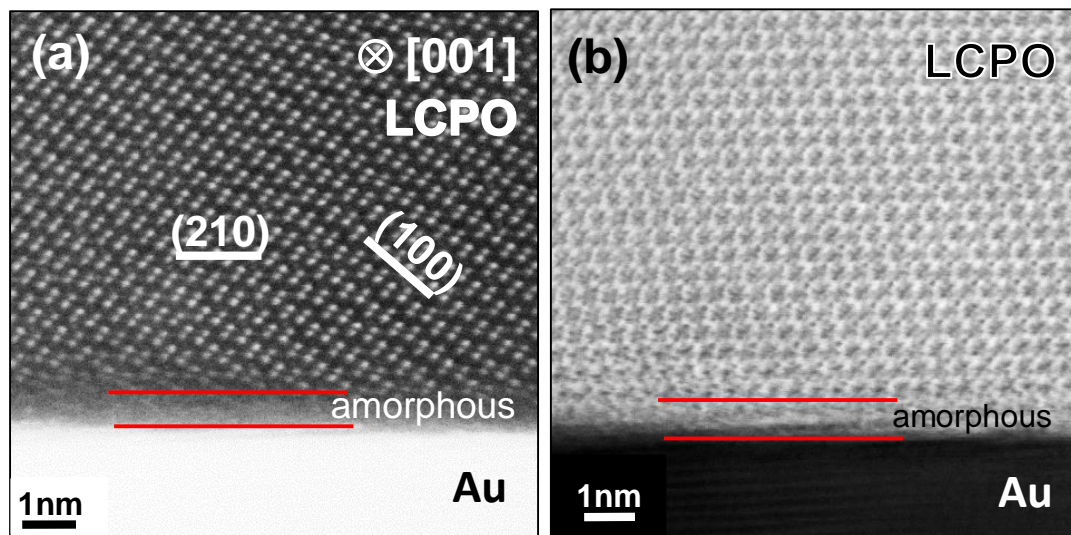


Fig. S2 (a) HAADF and (b) ABF STEM images of the LiCoPO_4 (LCPO)/Au heterointerface revealing amorphous regions approximately 0.8 nm thick.

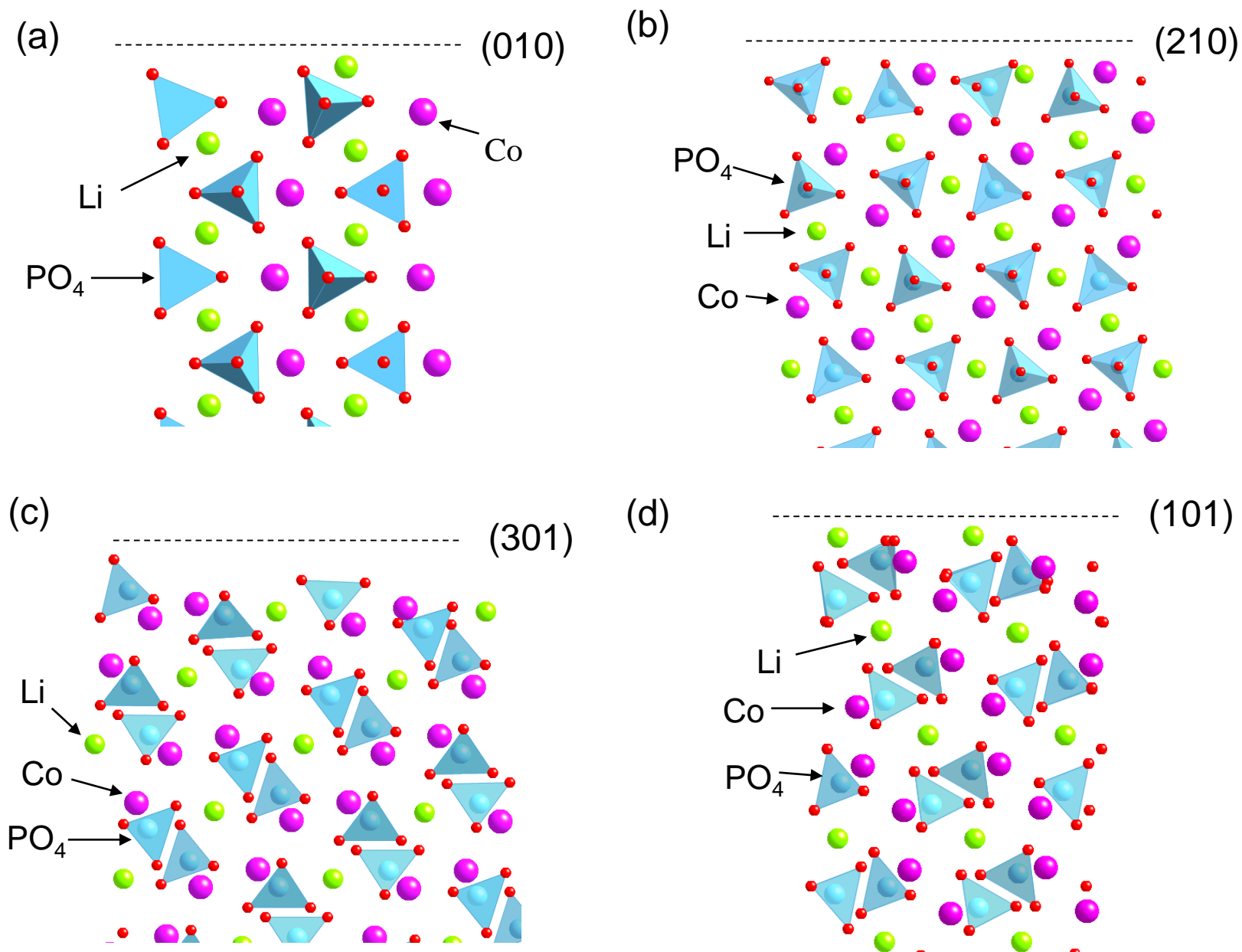


Fig. S3 Side views of calculated atomistic structures of (a) (010), (b) (210), (c) (301) and (d) (101) surfaces of LiCoPO₄.

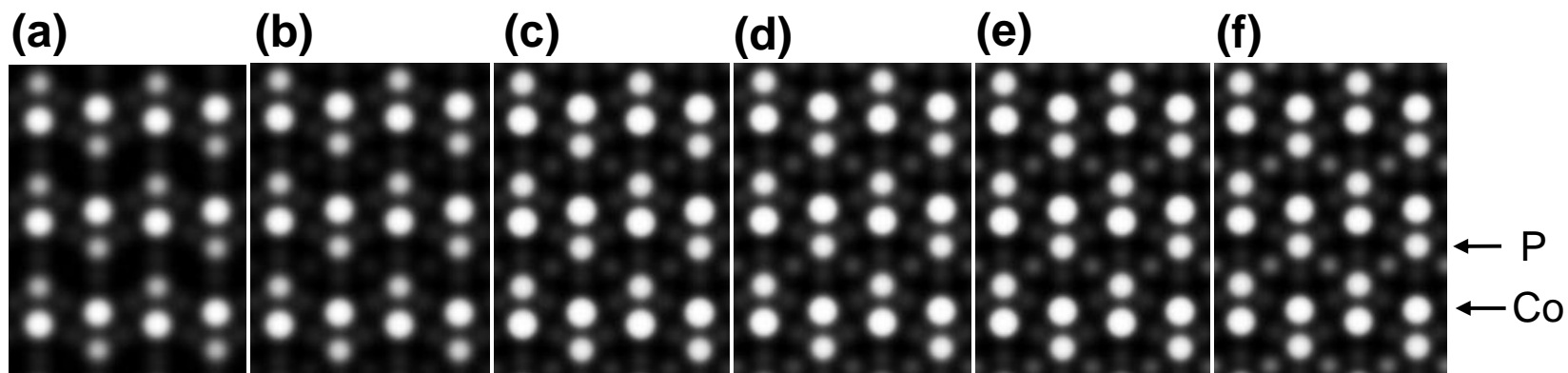


Fig. S4. Simulated HAADF-STEM images LiCoPO_4 viewed along $[001]$ for Li/Co cation exchange fractions of (a) 0%, (b) 10%, (c) 15%, (d) 17.5%, (e) 20% and (f) 25%.