

Figure 1: High-resolution XPS scans for as-received, Ar plasma and O₂ plasma pretreated lithium foils.

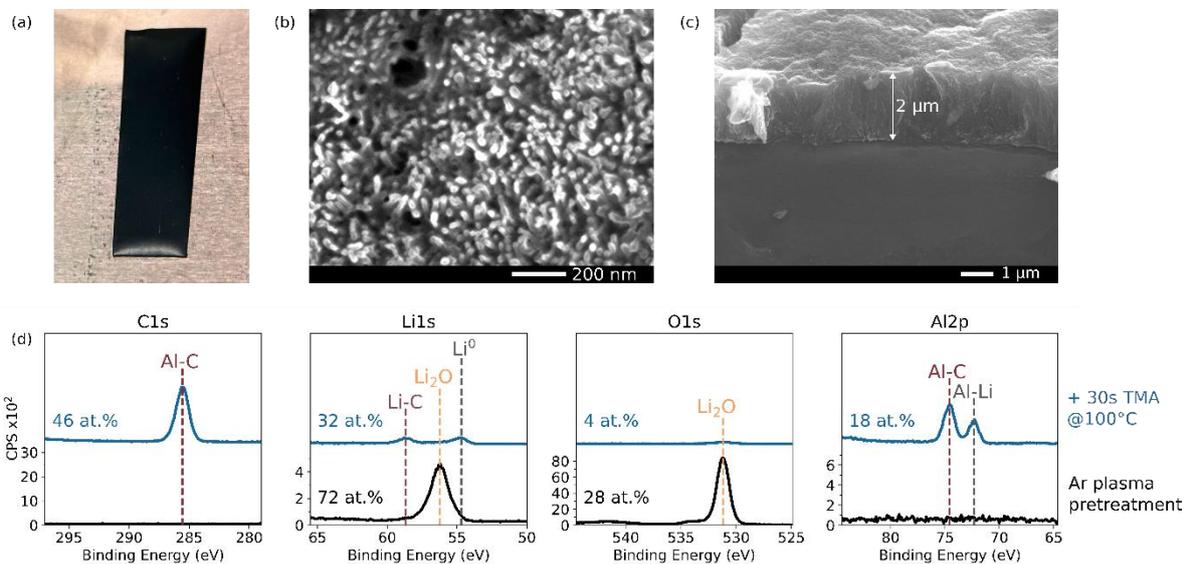


Figure 2: Ar plasma pretreated lithium foil after 30s TMA exposure (a) image, (b) SEM image of the pillar-like, porous growth, (c) cross-sectional SEM image, (d) high-resolution XPS scans showing a 2 μm thick decomposition layer incorporating C (46 at.%) and Al (18 at.%), alongside Li (32 at.%)

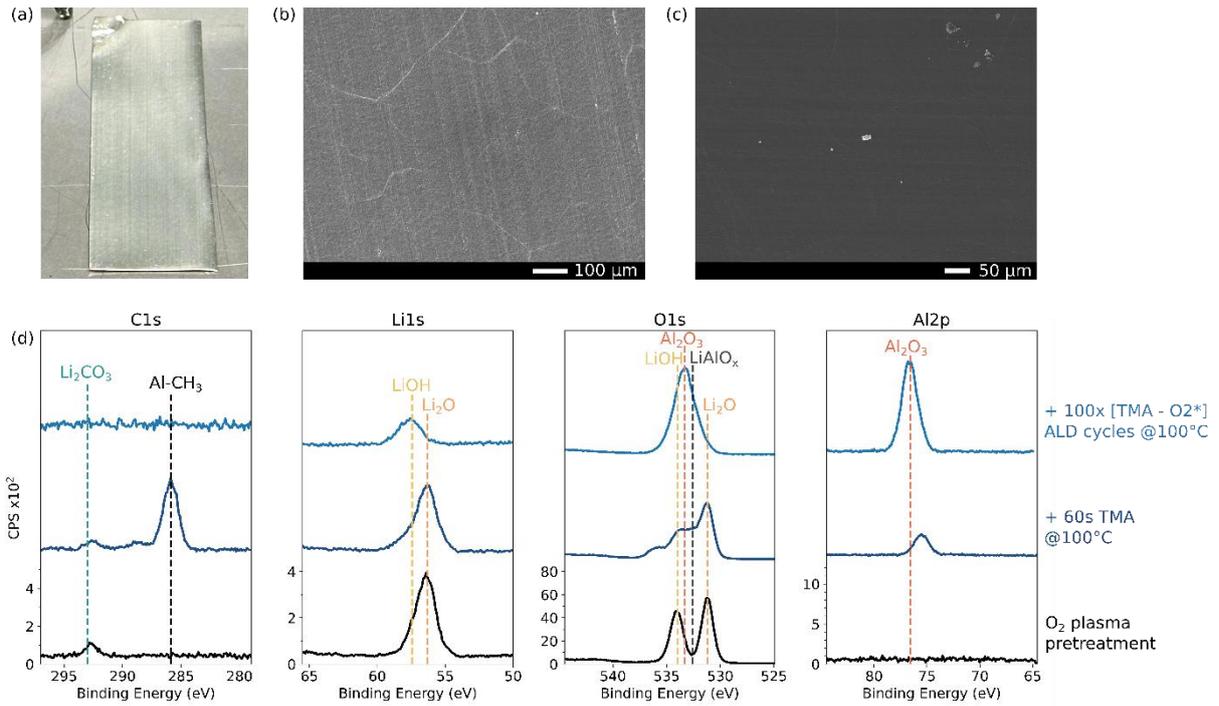


Figure 3: O₂ plasma pretreated lithium foil after 60s TMA exposure (a) image, (b) SEM image and (c) SEM image after 100 full TMA/O₂ plasma ALD cycles on an O₂ plasma pretreated lithium foil, (d) high-resolution XPS scans showing that the initial TMA exposure results in the formation of a LiAlO_x layer, while additional TMA/O₂ plasma ALD cycles result in controlled ALD growth of a (lithiated) Al₂O₃ layer.