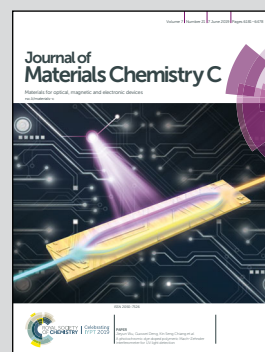


Showcasing research from the Emerging Device and System group (device.ust.hk), Department of Electronic & Computer Engineering, The Hong Kong University of Science and Technology.

Control of hexagonal boron nitride dielectric thickness by single layer etching

Ultra-thin h-BN films with precisely controlled thickness are important for fabricating 2D-material based nanostructures and devices. We developed a layer-by-layer etching method to obtain h-BN films with single atomic level accuracy. The method involves structural deformations of the top layer of the h-BN film by oxygen-radical adsorption, followed by the removal of the weakened layer using nitrogen-ion bombardment. The mechanism is verified by *ab initio* simulations and experimental results. The fabricated h-BN films show low leakage current and high breakdown field even with only a few nanometers thickness.

As featured in:



See Zichao Ma, Lining Zhang et al., *J. Mater. Chem. C*, 2019, 7, 6273.