Ultra-thin two-dimensional crystalline nanoporous coatings as cathode protection layers

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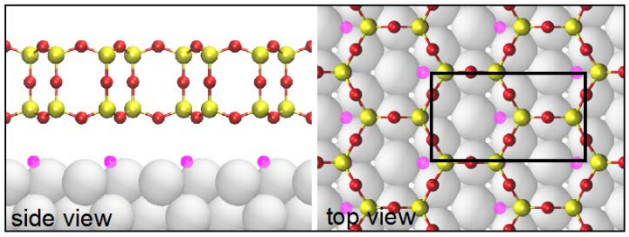

Operational lifetime of cathodes for high brightness electron sources are often limited by three factors – ion bombardment of the cathode, chemical contamination and thermal decomposition. The recent development of 0.5 nm thick crystalline two-dimensional nanoporous silica and aluminosilicate structures has the potential of reducing these detrimental effects and thus significantly increase the cathode lifetime during operation. This talk will describe these new materials and the opportunities they offer as ultra-thin protection layers.