Ultrathin silicate films on metals

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The talk addresses preparation and atomic structures of ultrathin silica films on metal substrates. Recent, both experimental and theoretical, studies provided clear evidence that metal-supported, well-ordered silica films are formed by a hexagonal layer of corner-sharing [SiO4] tetrahedra like in layered silicates.[1] Depending on the preparation conditions and metal substrates well-ordered mono- and bi-layer silicate films can be grown. Doping of a bilayer silicate film by other elements (Al, Fe, Ti, C) leads to different substitution patterns.[1,2] Some structural similarities between a single-layer silicate (referred to as silicatene) and graphene were observed. The results open a new playground for understanding and tailoring structural, electronic and chemical properties of the truly two-dimensional systems.