




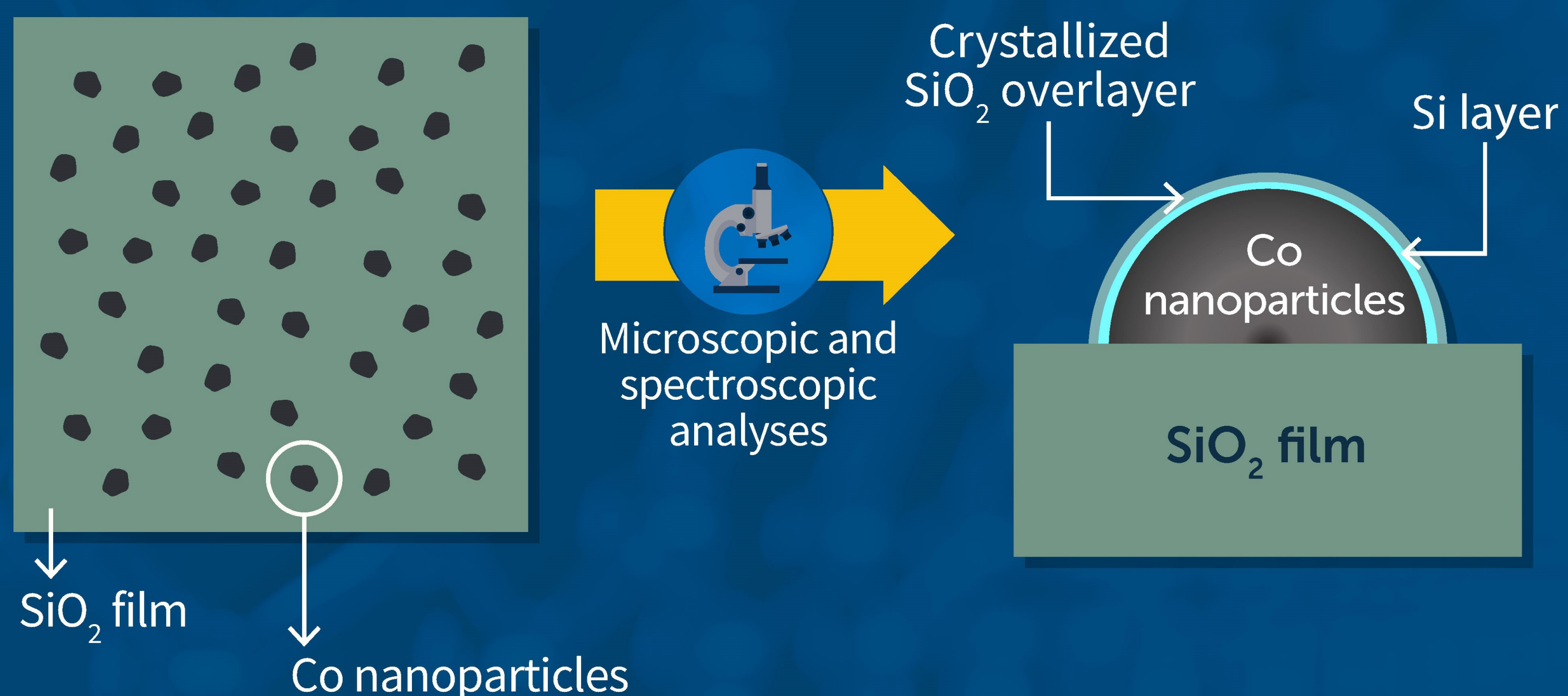
Origins of Strong Metal-Support Interactions in Silica Supported Metal Catalysts

Chemical
Science

Strong metal-support interaction (SMSI) is seen in metal oxide supported catalysts and affects their behaviour

Atomic-scale observations of SMSI in Co/SiO₂ catalyst

-  Reductive atmosphere
-  Pressure: 50 Pa
-  Temperature: 750°C



Migration of SiO₂ to Co surface to form quartz SiO₂ overlayer

Partial reduction of SiO₂ to Si and formation of SiO₂-Si-Co interface

Diffusion of Si in Co to form Co-Si alloy

SMSI is rarely observed between hard-to-reduce oxide supports (SiO₂, MgO, ZnO) and metal nanoparticles

The confirmation of SMSI interactions in SiO₂ - supported metal catalysts will aid in future catalyst design