Nanoporous silica composite material for corrosion inhibition of aluminum alloys

Environmentally resistant corrosion inhibitor coatings are required to ensure the reliability and long-term durability of metallic alloys. Composite silica particles are a potential cost-saving candidate to replace current technology. The internal pore structure of these particles may be engineered to impart controlled release properties. Pore structure, inhibitor distribution, and surface chemistry influence transport from the pore to the outer particle surface. Our aim is to develop silica composite particles with suitable structures and to investigate the fundamental mechanisms in the configurational transport of inhibitors. A mathematical model is expected to describe the transport behavior.

Particles with cubic single crystal