

What are the potential areas of application of sol-gel process in the field of coatings?

In fact, sol-gel techniques are not new to the coatings technology. Anticorrosive inorganic zinc silicate coating is based on the principle of sol-gel chemistry. However, the technique has now evolved a great deal and is potentially suited to in-situ generation of nano-structures in the coating matrix. This approach helps to control the loss of nanophase particles due to re-agglomeration.

- Coating films can be embedded with nano-gels which upon solvent evaporation attain novel properties.
 - Metal oxide nano particle dispersions can be made for use as additives for improvement in scratch resistance or UV resistance
 - Porous nanostructures of silica or alumina with controlled pore size can be prepared and used as opacity enhancers.
 - Coatings with aluminium hydroxide gel structures can act as fire retardant coatings.
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