

Effect of various nanomaterials used in coatings to resist corrosion -A Detailed Review study

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Abstract : In many industries, various types of metals are used for the construction of Reactors, Pressure vessels, piping's, etc. So, depending on environmental conditions, the property of process fluid, different temperature, and pressure suitable MOC. (Material of construction) is used. If proper material is not selected then fluids may be liquids like water, Oil, NaCl, and some gases like CO₂, H₂S, etc. will Corrode the vessel and this is problematic factors were most of the industries are lacking behind for finding the solution. So, the solution behind this corrosion is to apply a layer of coating which has different properties to that of metal and which can sustain on the metal under aggressive conditions. But only a simple layer of coating is not enough to avert corrosion because fine properties (Fine size and High density) might form active sites for corrosion attack. So, in that case, nanoparticles should be added/Mixed to the coating to improve the property of coating. A nanocoating is a coating that either has constituents in the nanoscale or is composed of layers that are less than 100 nm. By applying this layer, not only the life of the reactor is enhanced but also it prevents contamination of inner fluids. So, different types of nanomaterials can be used for coatings like Graphene coating, Nickel-P Coatings, Al, Silver, TiO₂, etc. This review has studied, Effect of different nanomaterials coatings at the different corrosive environments and the different synthesizing and analyzing techniques used by research scholars to conclude their evidence.

Keywords : MOC., Corrosion, nanoparticles, nanocoating, active sites and synthesizing and analyzing.

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