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Study of Nano Coating on Zirconium by Sol-Gel Process

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Abstract : There are several cladding techniques such as hard facing, coating and surfacing to improve corrosion and wear properties of base materials. Cobalt base alloys / Nickel based alloys are the most common clad materials used to improve the corrosion and wear properties of the base materials, Nano-coating of these valve material by Zirconium using sol-gel process and validating the same with the Electrophoretic deposition processes is executed. Conventionally research studies indicates the various methodologies adopted for the Nano coating of Zirconium are spin coating ,sol-gel dip coating method, plasma sputtering, Ion beam assisted deposition (IBAD) etc. The results proved the uniform distribution with good penetration and significant improvement in other properties. It has been established that there is an 84% increase in corrosion resistant and 30% improvement in wear resistance properties.

Keywords : Nano-coating, sol-gel, wear resistance, Zirconium.