## **Development of Hydrophobic Coatings on Aluminum Alloy 7075**

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**Abstract :** High performance requirement of aircrafts and marines industry demands to cater major industrial problems like wetting, high-speed efficiency, and corrosion resistance. These problems can be resolved by producing the hydrophobic surfaces on the metal substrate. By anodization process, the surface of AA 7075 has been modified and achieved a rough surface with a porous aluminum oxide (Al2O3) structure at nano-level. This surface modification process reduces the surface contact energy and increases the liquid contact angle which ultimately enhances the anti-icing properties. Later the Silane and Polyurethane (PU) coatings on the anodized surface have produced a contact angle of 130°. The results showed a good water repellency and self-cleaning properties. Using SEM analysis, micrographs revealed the round nano-porous oxide structure on the substrate. Therefore this technique can help in increasing the speed efficiency by reducing the friction with the outer interaction and can also be declared as a green technique since it is user-friendly.

Keywords : AA 7075, hydrophobicity, silanes, polyurethane, anodization

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