

## ABSTRACT

*Corrosion of metals and their alloys, including zinc, is an inevitable process due to interaction with the environment. Therefore, superhydrophobic technology is applied to zinc surfaces to improve zinc resistance to corrosion. This study analyzed the effect of sandpaper grit, sonication duration, and purification temperature on zinc surface superhydrophobicity. Experimental design and variation analysis using response surface methodology-central composite design (RSM-CCD). The maximum water contact angle condition, 173°, is obtained from a combination of medium sandpaper roughness (500), sonication for 10 minutes, and a purification temperature of 80 °C. The optimal sample morphology showed a coarser zinc surface with many clusters, and it was evident that the silica structure attached to the surface of the nanorod sub-microtube formed on the surface. The results of the FTIR test confirmed the formation of silica nanoparticles through the IR spectrum. Optimal samples show great potential in anti-corrosion and self-cleaning applications.*

**Keywords** : *superhydrophobic, anti-corrosion, self-cleaning, surface response method.*