

## عنوان مقاله:

Developing of Corrosion Resistance Nano Copper Oxide Coating on Copper using Anodization in Oxalate solution

## محل انتشار:

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## خلاصه مقاله:

Copper alloys are widely used in the manufacturing of heat transfer applications, this due to their excellent heat transfer properties. Copper contamination is one of the serious industrial problems in the boiler feed water system. This contamination commonly resulted from copper corrosion reactions in boiler feed water environment. The best way to reduce the copper contamination is by improving copper corrosion resistance. This research studies the developing of copper corrosion resistant by using anodization technique. The anodization experiments are conducted in oxalate solutions of concentrations from 0.1 to 0.5 M, at a temperature range from 24 to 0 o C and applied potential from 7.5 to 9 V. Anodized coating analyzed using Field emission scanning microscope, energy dispersive X-ray spectroscopy, and X-ray diffraction. Characterization results referred to the formation of copper oxide anodized coating with grain size range from 25 to 68 nm. The corrosion resistance of the anodized copper samples carried out in simulated boiler feed water. Results show that the corrosion resistance of the anodized samples was enhanced. The corrosion protection efficiencies for the anodized coating increased 86.2% and 74.5% in testing solutions .contains 3.5% NaCl, and 2 mg/l NH<sub>3</sub>, respectively

## کلمات کلیدی:

Copper corrosion, Copper oxide, Anodization technique, Corrosion protection

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