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Abstract:

The investigation was aimed at electrodepositing chromium on mild steel surface from non-toxic trivalent chromium bath instead of toxic hexavalent chromium employed for this purpose. We observed the effect of pH, temperature, current density (C.E.) and also time on to the current efficiency. On the other hand we also observed the effect of the concentration of CrCl_3 on the plating thickness and optical reflectivity. The optimum pH value and bath temperature are 3 and 40°C respectively to obtain highest current efficiency. On the other hand, 90 min deposition time was the best for high current efficiency. We also achieved good current efficiency at 20 A/dcm^2 current density. But the plating thickness was increased with increasing the CrCl_3 concentration in the electrolyte. In case of optical reflectivity, the result is totally opposite. Our findings will contribute to develop the products of plating industries.