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Impact of a Bright Nickel Interlayer on the Performance of Solar Absorber Nano Coatings Deposited by Electroplating on Copper Substrate

Abstract: In this work, a layer of bright nickel was deposited on the copper substrate using electroplating technique watts bath, before copper nanoparticles (CuNP) Evaporation via physically vapor deposition. The improvement of the solar absorber using CuNP and CuNP, combined with bright nickel, was found to be well than CuNP singly. Bright nickel improved the thermal stability of the absorber. Also the other optical properties absorption, emissivity slight decrease from (93% to 87%) in another hand thermal conductivity was evaluated using hot disk analyzer with a good improvement obtain by CuNP (89%) deposited on copper substrate while it decreases with percentage 18.8% in the presence of bright nickel combined with CuNP, other Characteristics like structure and phases of coating layers achieve using XRD, topographic was obtained using AFM and SEM.

Keywords: bright Nickel, Copper Nanoparticles CuNP, PVD, Solar Absorber.

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