عنوان مقاله:

Microstructure and optical properties of lustre glazes produced on a copper body

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نویسندگان:

Tahereh Usefzaei - Department of Physics, Faculty of Science, University of Sistan and Baluchestan, Zahedan, Iran

Majid Rashidi Huyeh - Department of Physics, Faculty of Science, University of Sistan and Baluchestan, Zahedan, Iran

Reza Jabiri - Department of Physics, Faculty of Science, University of Sistan and Baluchestan, Zahedan, Iran

خلاصه مقاله:

In this research, a luster enamel is applied to a copper body. A white glaze, conventionally applied in enamel handcraft, was used as the luster substrate. Silver nitrate was used as the source of the lustre metal. Since the work aimed to determine the optimal firing conditions, several samples were prepared with different reduction temperatures and times. The optimal firing temperature and reduction time were found to be ۶۰۰ ℃ and ۱۰ min, respectively. The microstructure and chemical analyses were performed on the samples using an FE-SEM image. The results showed the successful formation of silver nanoparticles within the glaze substrate. In addition, two layers were formed: a thin glass layer of several tens of nm on the surface and a layer containing silver nanoparticles inside the glaze. The results also showed that the silver nanoparticles can penetrate several microns into the glaze body. Reflectance spectra confirmed the presence of silver nanoparticles in the lustre with a volume fraction of order of ۰.۰۱%.

کلمات کلیدی:

Lustre glaze, Enamel glaze, Noble metal nanoparticles, Thin film, surface plasmon resonance