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ABSTRACTS

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formula with carbon black has better mechanical properties in terms of hardness, modulus at 100% and 300%, tensile strength, tear strength but worse in terms of elastic property and elongation at break than the formula without carbon black. (full paper available on CD)

D_D0018: THE EXPERIMENTAL DIFFUSION BONDING OF STERLING SILVER AND COPPER "MOKUME GANE" JEWELRY MAKING TECHNIQUE

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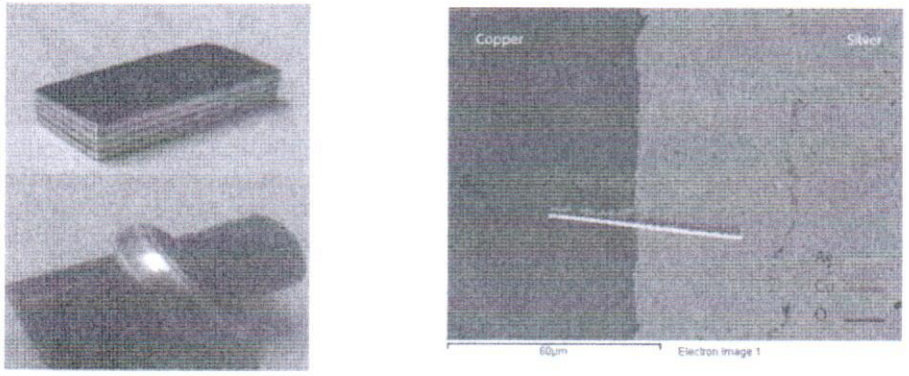
Abstract: Mokume gane is a metal jewelry making technique based on overlaying of different metal laminates to give the distinctive layer pattern. In this work, the layers of metals were created from sterling silver (92.5% Ag and 3.5% Cu) and copper plates. In order to optimize time, experimental parameters were varied by changing the holding time as 1, 2 and 3 hours at 750°C as a control temperature. The solid-state diffusion bonding between sterling silver plate and copper plate was studied using scanning electron microscope (SEM), energy dispersive spectrometer (EDS) and Vicker microhardness test. SEM images revealed that the optimum time for well attachment of sterling silver plate and copper plate was 2 hours. Diffusion between two metals was examined using line scan EDS technique. The result showed the pattern of Ag and Cu diffusion at the interface region. In addition, low hardness at metal interface was due to non-homogeneous mixing of the metals. (abstract only)



(A) (B)

Figure 1. (A) Laminated sterling silver/copper billet and Mokume gane ring (B) SEM image of interface area where EDS line scan analysis of the specimen diffusion welded at 750°C for 2 hours

D_D0019: COMPOSITE FILM BASED ON DISPERSION OF TITANIUM DIOXIDE (TiO_2) IN POLY(VINYL ALCOHOL) MATRIX: OPTICAL AND THERMAL PROPERTIES

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Abstract: In this research project, the composite film based on dispersion of titanium dioxide (TiO_2) in poly(vinyl alcohol), PVA matrix has been prepared successfully by using conventional cast film method. The TiO_2 content was in the range of 0.5-5wt%. Results from FT-IR spectra confirmed the appearance of TiO_2 in the composite film. The thermal property of the composite film has been determined by differential scanning calorimetric (DSC) method. The results from DSC thermograms show that the glass transition temperature (T_g) and the melting temperature (T_m) of the composite film were higher than those of pure PVA