



## ABSTRACTS

### 39<sup>th</sup> Congress on Science and Technology of Thailand (STT 39)

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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**

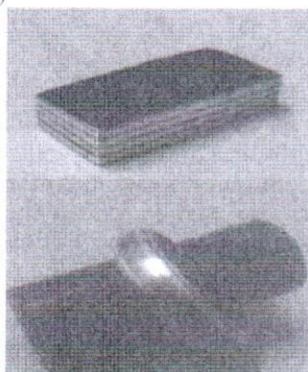
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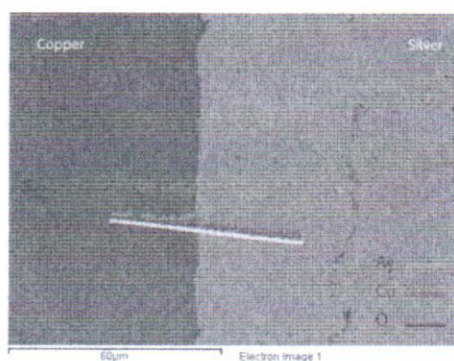
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**Abstract:** Mokume gane is a metal jewelry making technique based on overlaying of different metal laminates to give the distinctive layer pattern. In this work, the layers of metals were created from sterling silver (92.5% Ag and 3.5% Cu) and copper 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<sub>2</sub>) 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<sub>2</sub>) in poly(vinyl alcohol), PVA matrix has been prepared successfully by using conventional cast film method. The TiO<sub>2</sub> content was in the range of 0.5-5wt%. Results from FT-IR spectra confirmed the appearance of TiO<sub>2</sub> 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<sub>g</sub>) and the melting temperature (T<sub>m</sub>) of the composite film were higher than those of pure PVA

film. In addition, gravimetric analysis was found that the decomposition temperatures were also lower. Micrographs of

**D\_D0020: PHENOLIC NANOTUBE (PNT)**

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**Abstract:** The PNT was prepared in liquid crystal phase by using 5 wt% phenol. The PNT was studied by using differential scanning calorimetric (DSC) method. The DSC thermograms showed that the glass transition temperature (T<sub>g</sub>) and the melting temperature (T<sub>m</sub>) of the PNT mixture determined by DSC method. The PNT was prepared by the temperature of the pure liquid crystal phase. The PNT was investigated up to 1000°C. The electronic conductivity was investigated at

Fig

**D\_D0021: HYDROLYSIS OF THEIR PHOTO**

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**Abstract:** Cobalt ferrite (CoFe<sub>2</sub>O<sub>4</sub>) was synthesized by the sol-gel method using cobalt acetate and iron(III) nitrate as precursors and characterized by scanning electron microscope (SEM) and X-ray diffraction (XRD).