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# Contents List and Abstracts from the Journal of the Adhesion Society of Japan

**Journal of The Adhesion Society of Japan**  
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### **Relationship between Dielectric Properties and Viscosity During Curing of Epoxy Resin with an Aromatic Amine**

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## Abstract

The curing behavior of an epoxy resin system was monitored by a dielectric measurement whose sensor consisted of a vertical parallel plate electrode. The

materials used in this study were diglycidyl ether of bisphenol A (DGEBA), which was refined from Epon 825 by the crystallization technique, and 4,4'-diamino diphenyl methane (DDM).

Dielectric properties were compared with viscosity at the initial curing stage of the stoichiometric DGEBA-DDM system under isothermal conditions. Good correlation was observed between dielectric loss and viscosity of the epoxy resin system. The relation can be described by the following equation:

$$\ln \eta = A \ln (\omega \epsilon'' )^{-1} + B$$

where  $\eta$  is viscosity,  $A$  and  $B$  are constants,  $\omega$  is angular frequency and  $\epsilon''$  is dielectric loss.  $\omega \epsilon''$  is a term related to a.c. conductivity at the initial curing stage.

The constants,  $A$  and  $B$ , in this experiment had almost the same values respectively at the initial stage of isothermal curing between 70°C and 100°C.

(Received: December 5, 1985)

### Adhesion of Ion-plated Cobalt Thin Films on Various Polymer Films\*

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### Abstract

The mechanism of adhesion at the interface between cobalt thin layer and polymer film was investigated. Cobalt was deposited on various polymer films by a RF ion-plating technique.

The following results were obtained: (1) A RF ion-plating technique can prepare strongly adhered cobalt thin films on polymer films. (2) The tensile strength of the cobalt thin layer/various polymer film interface was obtained as follows; polypropylene < polytetrafluoroethylene < low density polyethylene < high density polyethylene = polystyrene = poly(ethylene terephthalate) = poly(vinyl butyral). (3) When polypropylene, low-density polyethylene and high-density polyethylene were used for the substrate, a strong adhesion between cobalt thin layer and polymer film was obtained. This was attributed to the crosslinking layer formed at the surface of the substrate by means of ion-plating of cobalt.

(Received: January 13, 1986)