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Properties of Photosensitive Polyimides with Various Molecular Weights

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A series of negative-type photosensitive polyamic acids with various molecular weights was synthesized from cyclobutane-1,2,3,4-tetracarboxylic dianhydride, 2-(methacryloyloxy)ethyl 3,5-diaminobenzoate and 2-(methacryloyloxy)ethyl-4-aminobenzoate in *N*-methyl-2-pyrrolidinone. We had investigated the degree of planarization, the transmittance and the thermal stability for the polyamic acids after the photoirradiation reaction at an exposure dose of 200 mJ/cm². The films prepared from the polyamic acid (PAA-1) with the lowest molecular weight exhibited higher degree of planarization and the transmittance as compared with those of the film prepared from the polyamic acid (PAA-4) with the highest molecular weight. Initial decomposition temperatures of the cured polyamic acids with different molecular weights were similar, which was stable up to around 300 °C. Furthermore, the photosensitivity and the transmittance of PAA-1 was investigated in the presence of photoinitiators at 365-400 nm using a high pressure mercury lamp. The resolution of the photocured film showed about 50 μ m.

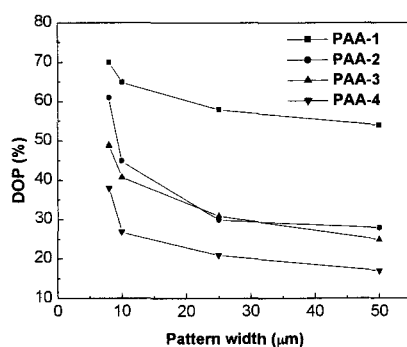


Figure 1. Effect of the molecular weights and the pattern widths on a degree of planarization.

References

1. Choi, S. M.; Kim, K. J.; Yi, M. H. *Journal of Applied Polymer Science*, **96**, 2300 (2005).
2. Choi, S. M.; Kwon, S. H.; Yi, M. H. *Journal of Applied Polymer Science*, in press (2005).