

C125267 : MAJOR MAJOR PHYSICS

KEY WORD: CONDUCTING POLYMER/ ELECTROPLATING/ PLASTIC SURFACE

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PLATING ON PLASTIC SURFACE. THESIS ADVISOR : ASSO. PROF. ANUNTASIN
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Conducting polypyrrole films were synthesized by chemical vapor deposition. First, poly(vinyl acetate)(PVAc) - FeCl_3 solutions in methanol were prepared and coated on plastic films. After drying at $40 - 50^\circ\text{C}$, the films were exposed to pyrrole vapor in vacuum at 0°C for 6-24 hours. Polypyrrole films were then deposited on coated plastic surfaces. These films were dark green and slightly transparent. The optimum condition yielding polypyrrole films of low surface resistance (100-150 Ohm/square) is : molar ratio VAc : $\text{FeCl}_3 = 3:1$ and polymerization time(t_p) : 17-24 hours.

Copper was coated on the resultant polypyrrole film by electrodeposition. The electrolyte contained CuSO_4 , distilled water and small amount of H_2SO_4 in suitable proportion. The electroplating of the polypyrrole film is possible when the surface resistance is lower than 200 Ohm/square. For the film of 1 cm^2 the minimum plating time is about 2 minutes. It was found that thickness of copper was not the same at all areas and copper penetrated deeply into polypyrrole - poly (vinyl acetate) surface and cannot be removed from the film. This plating method has potential application in printed circuit board industries.