

A Copper-Based Catalyst for Poly-Urethane Synthesis from Discarded Motherboard

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By displaying thermoplastic, elastomeric and thermoset behavior depending on their chemical and morphological properties, polyurethanes have caught attention since 1937 when Bayer and his co-workers made them for the first time using the reaction of polyester diol and isocyanate.¹ To produce a great range of versatility, various isocyanates can be used for making linear or cross-linked polyurethanes.^{2,3} Here we used IPDI as isocyanate and bamboo polyol as polyalcohol to prepare hard polyurethane and polyurethane foam. A cheap copper-based catalyst has been synthesized from discarded motherboard to replace the industrially used tin-based catalyst.⁴ DBTDL [dibutyltin(IV) dilaurate] which is expensive and we found almost similar productivity compared to conventional catalyst DBTDL. By optimizing catalyst loading, time and temperature, a 97% yield was obtained with 1.8 mol% catalyst loading in 2 hours. A plausible mechanism has also been proposed.

References:

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