

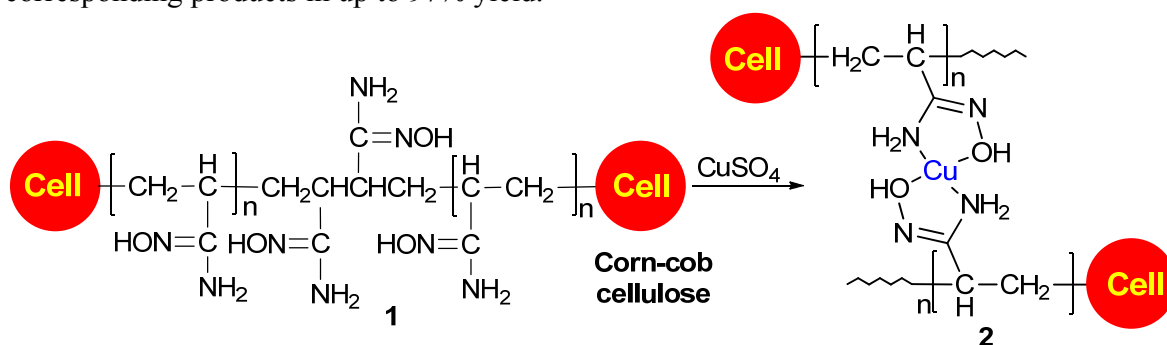
WASTE CORN-COB CELLULOSE SUPPORTED COPPER CATALYST FOR CLICK AND AZA-MICHAEL REACTIONS

Md. Shaheen Sarkar,* Md. Lutfur Rahman, Mashitah Mohd Yusoff

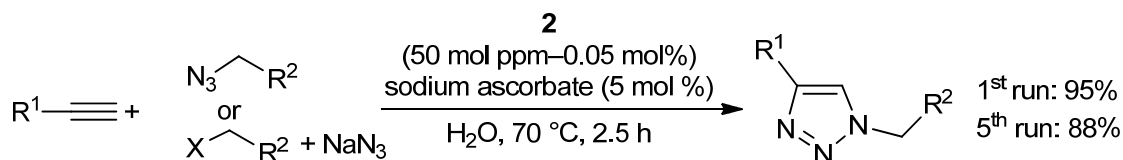
Faculty of Industrial Sciences & Technology, University Malaysia Pahang, Gambang 26300, Kuantan, Pahang, Malaysia.

E-mail: shaheen@ump.edu.my

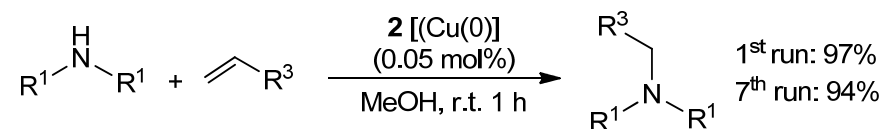
We prepared a highly active cellulose supported poly(amidoxime) Cu-catalyst **2** by the surface modification of waste corn-cob cellulose through graft copolymerization process (Scheme 1). The Cu-catalyst **2** was efficiently promoted the click reaction¹ of organic azides and terminal alkynes including the three-component cyclization of a variety of alkynes, organic halides, and sodium azide (Scheme 2). The catalyst with 50 mol ppm (0.00050 mol%) to 0.05 mol% Cu promoted the cycloaddition with a TON of up to >18800, and was reused four times without loss of catalytic activity. Moreover the catalyst was also promoted the Aza-Michael reaction of aliphatic amines with a variety of olefins to give the corresponding products in up to 97% yield.



Scheme 1. Preparation of corn-cob cellulose supported Cu-catalyst **3**



Scheme 2. Click reaction



Scheme 3. Aza-Michael reaction

References:

1. a) Shaheen M. Sarkar, Yasuhiro Uozumi, and Yoichi M. A. Yamada, *Angew. Chem. Int. Ed.* **2011**, *50*, 9437-9441; b) Yoichi M. A. Yamada, Shaheen M. Sarkar, and Yasuhiro Uozumi, *J. Am. Chem. Soc.* **2012**, *134*, 3190-3198; c) Yoichi M. A. Yamada, Shaheen M. Sarkar, and Yasuhiro Uozumi, *J. Am. Chem. Soc.* **2012**, *134*, 9285-9290.