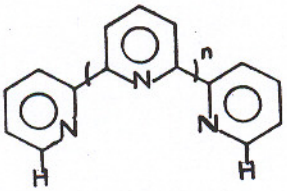
T1400B

OLIGOMERIZATION OF 2,2'-DIPYRIDYL: FACILE SYNTHESIS OF POLYPYRIDYLS

David C. Hager and George R. Newkome

Department of Chemistry, Louisiana State University, Baton Rouge, Louisiana 70803

There has been renewed interest in the synthesis and complexation studies of polypyridyls during the last few years. The Ullmann and related oxidative coupling reactions have been used for the synthesis of these compounds. However, these reactions proceed in very low yield and involve tedious work-ups. In connection with our studies of macrocycles containing subheterocyclic rings, we needed an effective method for the preparation of specifically substituted polypyridyls.



1 a : n = 1
b : n = 2
c : n = 3

Treatment of 2,2'-dipyridyl with 2-lithiopyridine produces polypyridyls of type 1; the yields of 1a-c depend upon the ratios of 2-lithiopyridine and 2,2'-dipyridyl. With >1.5 molar excess of 2-lithiopyridine, a major product from the reaction is pentapyridyl (1c). This represents an easier and more efficient preparation of 1c than the currently used literature procedure (F. H. Burstall, J. Chem. Soc., 1938, 1662). Tetrapyridyl (1b) is isolated in low yield relative to 1a and 1c. Results of competitive reactions of 1b as well as other polypyridyls with n-butyllithium will be presented. Reaction of 2,2'-dipyridyl with substituted 2-lithioheteroaryls to produce functionalized polyheteroaryls will also be discussed.