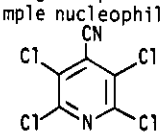
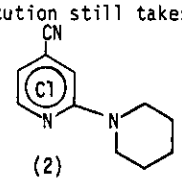
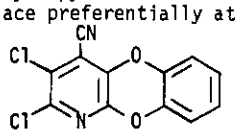
for nucleophiles to attack these preferentially. As nucleophiles react with tetrachloro-4-nitropyridine or tetrachloro-4-alkylsulphonyl-pyridines by displacement of the 4-substitutent, our studies have been directed mainly to tetrachloro-4-cyanopyridine (1), which is prepared by high-temperature gas-phase chlorination of 4-cyanopyridine. With simple nucleophiles, substitution still takes place preferentially at



(1)



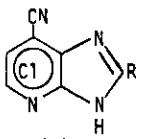
(2)



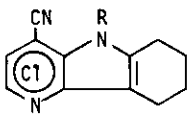
(3)

an α-position to give compounds such as the piperidino-compound (2). With bidentate nucleophiles, however, attack at both 2- and 3-positions gives new heterocycles; catechol, for example, gave the benzodioxino-pyridine (3).

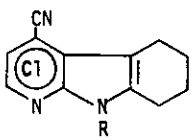
The principles established by the work described above have been extended to the synthesis of compounds of possible biological interest. Reactions of tetrachlorocyanopyridines with amidines have so far failed to give imidazolopyridines such as (4), but reactions with enamines



(4)



(5)



(6)

gave tetrahydrocarbolines (5) and (6). The reaction leading to the tetrahydrocarbolines has been studied in some detail, and the results will be discussed.

Pyridine with Polyfunctionalized Appendages

George R. Newkome,
Department of Chemistry,
Louisiana State University,
Baton Rouge, LA 70803.

Over the past few years, we have entered into an area of study in which metal ions as well as neutral organics are inclusioned within a neutral host. In order to better understand the fine-points and be able to predict the optimal guest-host relationship, our recent research activities have dealt with: synthetic aspects, molecular ion and molecule inclusion, site geometries, organometallic spin-offs, catalytic activities, polymer binding, and computer design. After a brief historical introduction of my entry into pyridine chemistry, this presentation will highlight our recent synthetic and structural adventures in pyridine chemistry.