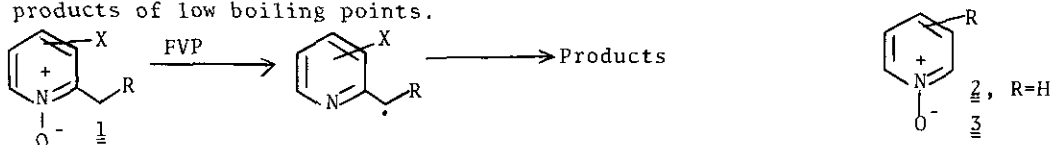


FLASH VACUUM PYROLYSIS OF PYRIDINE N-OXIDES

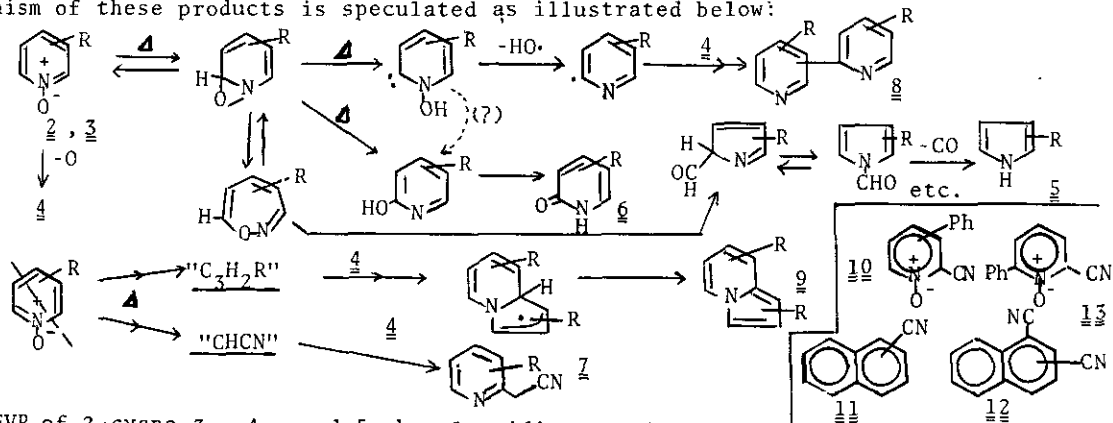
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In connection with the study on flash vacuum pyrolysis (FVP) of *N*-oxides of 2-methylpyridine derivatives (1), whose FVP at 650°C gave products derived from intermediary 2-picolyyl radicals, we have described that pyridine *N*-oxide (2) and 3- and 4-methylpyridine *N*-oxides strongly resisted FVP relative to 1, and that the FVP of those *N*-oxides at higher temperature (800°C) afforded complex mixtures of the products of low boiling points.



We wish to report the findings due to detailed examinations of the products of the above-mentioned FVP of 2 and of some substituted pyridine *N*-oxides.

The FVP of 2 and cyanopyridine *N*-oxides (3, R=CN) required a higher temperature than in the case of 1, and the FVP of 2 and 3 at 800°C under 0.1-0.001 mmHg (contact time: 0.01-0.001 sec) afforded pyridines (4), pyrroles (5), pyridones (6), 2-pyridyl-acetonitriles (7), and a mixtures of bipyridyls (8). Cyanoindolizines (9) are obtained in addition to 4-8 from the cyanopyridine *N*-oxides. The formation mechanism of these products is speculated as illustrated below:



FVP of 2-cyano-3-, 4-, and 5-phenylpyridine *N*-oxides (10) gave 1- and 2-cyanonaphthalenes (11) and dicyanonaphthalenes (12) in addition to 4-6, and the pyrolysis of 2-cyano-6-phenylpyridine *N*-oxide (13) gave the compounds 14 and 15 and products formed via the isocyanate 16.

Additionally, rearrangements of quinoline and isoquinoline were observed in the FVP of *N*-oxides of quinoline and isoquinoline.

Mechanisms for the described transformations will be discussed.