IDENTIFICATION OF N,N`-DIETHYL-N,N`-DITOYLDIPICOLINAMIDE DEGRADATION PRODUCTS BY GAS CHROMATOGRAPHY-MASS SPECTROSCOPY

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Abstract

Present research has led to the development of new N-containing reagents and methods with significant potential for accomplishing separation of trivalent metals from wastes such as substituted malonic diamides and tetra-alkyl-diglycolamides (TODGA). Substituted diamides of dipicolinic acid are of interest due to their pyridine nitrogen in proximity to the carbonyl allowing it to possibly participate in coordination.

Three diamidic derivative isomers of dipicolinic acid, N,N`-diethyl-N,N`-ditoyldipicolinamide (EtTDPA) were subjected to gamma ray radiolysis and acidic hydrolysis by nitric acid in the presence of the solvent trifluoromethylphenyl sulfone (FS-13). Samples were then analyzed by GC-MS in order to determine specific degradation products in both cases. No significant differences were observed between radiolysis products of the three isomers. At doses of 200 kGy the primary radiolysis products are formed by cleavage of the carbon-nitrogen amidic linkage in both acid contacted and non-contacted samples, forming the corresponding carboxylic acid and amine groups. Other observed products are presented and discussed. The hydrolysis pathway products also show mainly the production of the carboxylic acid and amine groups by well-known amidic hydrolysis mechanisms.