Phthalocyanines and Related Compounds: XLVII.[1] Nucleophilic Replacement of Chlorine Atoms in Tetrachlorophthalonitrile. Synthesis of Phenyl(alkyl)amino-substituted Phthalonitriles and Some Phthalocyanines Based Thereon

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Abstract—Nucleophilic replacement of chlorine atoms in tetrachlorophthalonitrile by the action of primary and secondary amines was studied. The reactions of tetrachlorophthalonitrile with amines at a ratio of 1:10 gave with high yields and regioselectivity the corresponding 4,5-diamino-3,6-dichlorophthalonitriles from cyclic secondary amines and 4-amino-3,5,6-trichlorophthalonitriles from primary amines and acyclic secondary amines. 4-Amino-3,5,6-trichlorophthalonitriles were used to synthesize cobalt and zinc phthalocyanine complexes. It was shown that replacement of chlorine atoms in the pyrrolic β-positions of hexadecachlorophthalocyanines by amino groups is not accompanied by red shift of the long-wave absorption band in the electronic spectra.

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