

## Convenient One-Pot Synthesis of $\alpha,\omega$ -Bis-(*para*-cyanophenyl)alkanes

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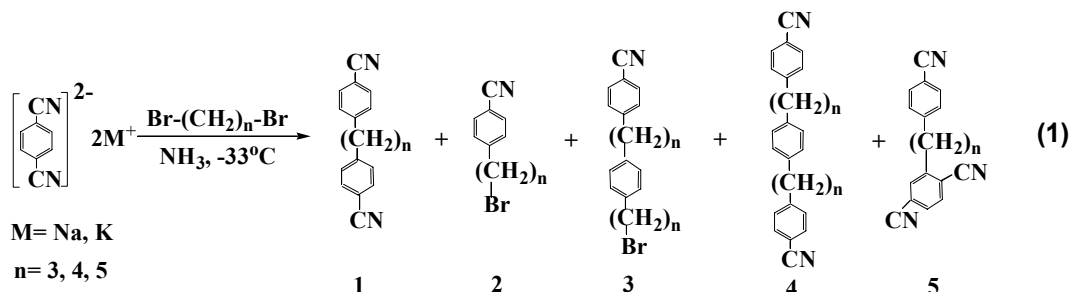
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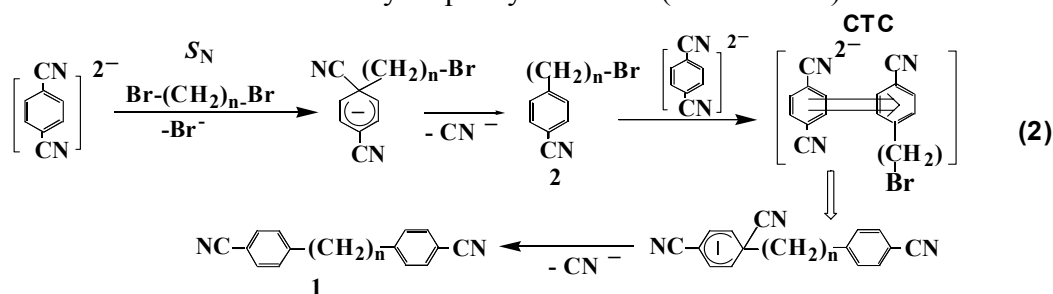
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$\alpha,\omega$ -Bis-(*para*-cyanophenyl)alkanes **1** are known as valuable precursors of biologically active compounds, monomers in the construction of macrocyclic systems and wave length converters of semi-conductor lasers. Until now there was no general method of the title compounds synthesis. Commonly used multi-stage approaches started from manifold precursors and provided total yields below 15%.<sup>1</sup> Recently cyanophenylalkanes **1** were found out to be the main products of the interaction of terephthalonitrile dianion as easily accessible and extremely active synthon with  $\alpha,\omega$ -dibromoalkanes in liquid ammonia. As additional components the product mixtures contained substances **2** – **5** (1÷20%, see Scheme 1). The yield of **1** varied from 60 to 90% depending on the alkyl chain length in dibromoalkane, reagents ratio and the order of their mixing. The experimental technique allowing to synthesize **1** with the yield up to 90% have been worked out.



According to the results of testing experiments the scheme suggested for **1** formation implies initial bromine nucleophilic substitution in didromoalkane by *ipso*-carbon atom of dianion resulting in cyanophenylbromoalkane **2** followed by the formation of charge transfer complex (CTC) between **2** and dianion. Further transformations in CTC lead to cyanophenylalkanes **1** (see Scheme 2).



<sup>1</sup> Ashley J.N., Barber H.J. JCS **1942**, 103; Sloan G.J., Vaughan W.R. *J. Org. Chem.* **1957**, 22, 750