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Synthesis and Disproportionation Reactions of 3,3'-Bis(*N*-hydroxy amidoxime) difurazanyl Ether

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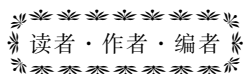
Abstract: 3,3'-Bis(*N*-hydroxy amidoxime) difurazanyl ether was synthesized from 3-cyano-4-nitrofurazan via etherification of nitro-group, addition, diazotisation and dioximation reaction with a total yield of 51.0%, and its structure and intermediates were characterized by IR, NMR and elemental analysis. The reaction conditions of dioximation were discussed and the optimum condition was obtained as follows: reaction temperature 20 °C, $n(\text{DCFOF}) : n(\text{NH}_2\text{OH} \cdot \text{HCl}) : n(\text{KOH}) = 1 : 4 : 4$. Under alkaline conditions, DOFOF could be easily disproportionated to obtain 3,3'-diamidoximinodifurazanyl ether. In addition, the reaction mechanism for disproportionation reaction of DOFOF was proposed.

Key words: organic chemistry; 3,3'-bis(*N*-hydroxy amidoxime) difurazanyl ether; energetic intermediate; synthesis; disproportionation

CLC number: TJ55; O62

Document code: A

DOI: 10.3969/j.issn.1006-9941.2013.06.001



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含能材料

ISSN 1006-9941
CN 51-1489/TK

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