4 结 论

(1) 以 $ZnBr_2$ 为催化剂合成 5-氨基四唑的最佳反应条件为：当 n(叠氮化钠)∶ n(双氰胺) = 1∶ 1.6，催化剂用量 n(叠氮化钠)∶ n(溴化锌) = 1∶ 0.3，反应温度 75 ~ 85 ℃，反应时间 5.5 h 时，5-氨基四唑的平均收率为 83.6%。

(2) $ZnBr_2$ 催化双氰胺和叠氮化钠在水溶液中反应合成 5-氨基四唑，具有工艺简单、催化剂廉价、产品收率高和可以避免 Stolleet 法中剧毒中间体叠氮酸产生等优点，因此，$ZnBr_2$ 是催化合成 5-氨基四唑的优良催化剂。该法具有较好应用前景。

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Synthesis of 5-Aminotetrazole Catalyzed by Zinc Bromide

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Abstract: 5-Aminotetrazole was synthesized from dicyandiamide and sodium azide in water with zinc bromide as catalyst. The effects of reactant molar ratio, catalyst consumption, temperature and reaction time on the reaction were discussed. The experimental results show that when the molar ratio of sodium azide to dicyandiamide is 1∶ 1.6 and catalyst consumption of sodium azide to zinc bromide is 1∶ 0.3, the reaction temperature is 75 - 85 ℃ and the reaction time is 5.5 h, the yield of 5-aminotetrazole reaches 83.6%. $ZnBr_2$ is a good catalyst to synthesize 5-aminotetrazole.

Key words: organic chemistry; 5-aminotetrazole; zinc bromide; catalysis; cycloaddition

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关于高能钝感炸药专辑的征稿

高能钝(低)感炸药一直以来是含能材料领域研究重点之一，为促进高能钝(低)感炸药在火炸药、推进剂等领域的应用研究，本刊拟于 2006 年 10 月(第 5 期)组织出版《钝感炸药研究论文专辑》。专辑内容涉及钝(低)感炸药的合成、配方、性能测试与表征、工艺与相关技术研究，及其应用和发展方向。

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