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ORIGINAL ARTICLE



TETRABUTYLAMMONIUM BROMIDE (TBAB) IS AN IMPORTANT COMPANION IN ORGANIC CHEMISTRY-A REVIEW

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Abstract:

(A) Uptake of the reactive gas e.g. Me_3N^l on realistic aqueous interface (H2O/D2O) is increased in the presence of fulvalic acid and tetrabutyl ammonium mixture due to their strong dopant interaction.

(B) The bimetallic aluminium(salen) complex together with tetrabutylammonium bromide act as effective catalyst for the synthesis of cyclic carbonates from epoxides and carbon dioxide.^{2, 3} Thus the problem of global warming caused by carbon dioxide is somehow controlled as carbon dioxide has been consumed by these reactions.

INTRODUCTION

Tetrabutylammonium bromide (molecular formula C16H36BrN, molecular weight 322.37) is white crystalline solid having melting point 102-106 °C and boiling point 102 °C. It is hygroscopic in nature. It is well known for its use as phase transfer catalyst. But TBAB can also be used in other ways.

Tetrabutylammonium bromide (TBAB) has been widely used in many reactions as catalyst.^{14,6-9} It has marked applications in polymer science,^{11,12} nano technology10 etc. It has also been extensively used as the source of bromide anion in supramolecular chemistry and molecular recognition,¹³ initiator in radical reaction.⁵

SYNTHESIS:

n-Butylbromide was reacted with n-tributylamine in inert atmosphere using acetonitrile as solvent under refluxing condition for the sufficient period of time to produce tetrabutylammonium bromide. Then the solution was cooled, water was added and from the mixture tetrabutylammonium bromide was isolated in high yield.



 \mathbb{O} The combination of a bimetallic aluminium(salen) complex and tetrabutylammonium bromide again was found to be the effective catalyst⁴ for the synthesis of cyclic di- and trithiocarbonates from epoxides and

carbon disulfide. The products of the reactions are dependent on temperature also.

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(E) The polymerization of styrene with HX-styrenic monomer $adduct/FeCl_3 adduct^6$ is affected in the presence of tetrabutyl ammonium bromide.

(F) The Suzuki coupling reactions of chlorobenzenes were carried out with palladium(II) chloride catalyst

supported on 4 Å molecular sieves in the presence of tetrabutylammonium bromide without any ligand.

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(J) Tetrbutylammonium bromide has a designated role in the preparation of amphiphilic organoborate block copolymers.¹¹

(K) Cationic surfactants e.g. Tetrabutylammonium bromide are used as dispersing agent in sulfur vulcanization of acrylonitrile butadiene elastomer $(NBR)^{12}$ by increasing the vulcanized crosslink density as well as the heterogeneity of the elastomer network.

(L) Tetrabutylammonium bromide has been used extensively for the source of bromide anion frequently required in the binding purpose of anion.¹³

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