the reaction conditions, would escape detection. One certainly should not construe the failure to detect as proof of failure to exist.

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Orientation in Base-Promoted β Elimination from 2-Butyltrimethylammonium *p*-Toluenesulfonate. The Absence of a Base Association Effect

Summary: Orientation in β eliminations from 2-butyltrimethylammonium *p*-toluenesulfonate promoted by *t*-BuOK in *t*-BuOH is not influenced by base association.

Sir: Base association in solvents of low polarity, such as *t*-BuOH, has very recently been shown to profoundly affect positional and geometrical orientation[1] in base-promoted β eliminations from 2-alkyl halides and *p*-toluenesulfonates.[2,3] Investigation of a possible effect of base association upon orientation in eliminations of a charged "onium" leaving group seemed warranted.

Relative olefinic proportions from reactions of 2-butyltrimethylammonium *p*-toluenesulfonate with *t*-BuOK–*t*-BuOH are recorded in Table I. The 2-butyltrimethylammonium ion was chosen because of the absence of significant amounts of syn elimination for this substrate.[4]

TABLE I
OLEFINIC PRODUCTS FROM REACTIONS[a] OF 2-BUTYLTRIMETHYLAMMONIUM *p*-TOLUENESULFONATE[b] WITH *t*-BuOK–*t*-BuOH AT 85°

Expt	[*t*-BuOK]	% 1-butene	*trans*-2-Butene/ *cis*-2-butene
1	0.10	90.6 ± 0.5[c]	0.42 ± 0.01
2	0.25[d]	91.6 ± 0.2	0.43 ± 0.03
3	0.50	91.1 ± 0.2	0.44 ± 0.04
4	0.25[e,f]	91.7 ± 0.8	0.46 ± 0.02

[a] Ampoule technique: R. A. Bartsch, *J. Org. Chem.*, **35**, 1334 (1970). [b] [2-BuNMe$_3$OTs], 0.10 *M*. [c] Standard deviation from repetitive analysis of reaction mixture. [d] Reference 4 reports a *trans*-2-butene/*cis*-2-butene ratio of 0.42 for reaction of 2-butyltrimethylammonium iodide with 0.2–0.3 *M* *t*-BuOK–*t*-BuOH. [e] With 0.25–0.30 *M* dicyclohexyl-18-crown-6 present. [f] Average of two runs.

From the results in Table I it is clearly evident that in reactions of 2-butyltrimethylammonium ion with *t*-BuOK–*t*-BuOH positional and geometrical orientation are insensitive to changes in the base concentration (expt 1–3) or to the addition of the potassium ion complexing reagent[5] dicyclohexyl-18-crown-6[6] (expt 4). These results are in sharp contrast to those reported for eliminations from 2-butyl bromide and *p*-toluenesulfonate.[2,3] Apparently, eliminations from the 2-butyltrimethylammonium ion are being induced by *dissociated tert*-butoxide base species produced through interaction of the tetraalkylammonium salt with *t*-BuOK.[7] Base association is therefore judged to be unimportant in determining orientation for anti eliminations from "onium" compounds.

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[1] In eliminations from a 2-substituted alkane, positional orientation refers to the relative proportions of 1- and 2-alkenes which are formed, whereas geometrical orientation compares the relative amounts of *trans*-2-alkene and *cis*-2-alkene which are produced.

[2] R. A. Bartsch, G. M. Pruss, R. L. Buswell, and B. A. Bushaw, *Tetrahedron Lett.*, 2621 (1972).

[3] R. A. Bartsch, G. M. Pruss, D. M. Cook. R. L. Buswell, B. A. Bushaw, and K. E. Wiegers, *J. Amer. Chem. Soc.*, submitted for publication.

[4] D. S. Bailey, F. C. Montgomery, G. W. Chodak, and W. H. Saunders, Jr., *ibid.*, **92**, 6911 (1970).

[5] C. J. Pederson, *ibid.*, **89**, 7017 (1967); **92**, 391 (1970).

[6] Trivial name for 2,5,8,15,18,21-hexaoxatricyclo[20.4.0.0^{9,14}]hexacosane.

[7] Benzyltrimethylammonium *tert*-butoxide is dissociated to a much greater extent than *t*-BuOK in *t*-BuOH: D. Bethell and A. F. Cockerill, *J. Chem. Soc. B*, 913 (1966).

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