Pure and Applied Chemistry

Official Journal of the International Union of Pure and Applied Chemistry

Executive Editor

P.D. Gujral IUPAC Secretariat, Bank Court Chambers, 2–3 Pound Way, Cowley Centre, Oxford OX43YF, England

IUPAC Committee on Publications

I.A. Williams *UK* (Chairman) S. Maričić *Yugoslavia* T.H.G. Michael *Canada* B. Munsch *France* D.A. O'Sullivan *USA*

Pure and Applied Chemistry Advisory Board

D.H. Whiffen *UK* (Physical)
E. Fluck *Germany* (Inorganic)
N.J. Leonard *USA* (Organic)
M. Mandel *Netherlands* (Macromolecular)
F. Pellerin *France* (Analytical)
L.E. Coles *UK* (Applied)
W.C. Purdy *Canada* (Clinical)

Since 1960 the Union has made available to chemists everywhere a very large amount of important material which it handles each year through its regular publication in *Pure and Applied Chemistry*. The objectives of the journal are:

- to publish the main invited lectures of symposia sponsored by IUPAC at which authoritative and up-to-date accounts on the subject of the symposium are presented by prominent scientists; the lecturers cover their own recent work and review the worldwide literature on the subject;
- to publish the recommendations of the Union's commissions on nomenclature, symbols and units;
- to publish technical reports on standardization, recommended procedures, collaborative studies, data compilations, etc.;
- to publish critically evaluated state-of-the-art commissioned review articles on important topics.

Subscription Information

Pure and Applied Chemistry is published monthly. Subscription rates for 1987 are £355.00 (UK), \$550.00 (USA, Canada & Japan), £420.00 (elsewhere) post free.

Order Form

Please tick the appropriate box and return	n 10	Blac	kwell	Scier	ıtific	Publi	catio	ns I	.td,	P. (). B	ox	88, (Oxford,	Engla	and.	
☐ I would like to subscribe to Pure	e an	$d A_l$	pplie	d Ch	emi	stry											
☐ I wish to pay by cheque/money	orde	er (d	elete a.	s nece.	sary)	and	encl	ose	th	e su	ını o	ο£.					
☐ I wish to pay by Access/Barclay	card	i/VI	SA/I	Mast	erca	rd (de	lete a	snee	CSSC	ny)							
Please debit my credit card no.]			
Expiry date					with	h the	sum	of									
Signature											E)at	e				
Please send me a specimen copy	of.	Pur	e anc	lAp_l	plied	l Che	misi	ry									
Name																	
Address																	

Blackwell Scientific Publications

P.O. Box 88, Oxford, England

Selective Reducing Agents

Triacetoxyborohydrides

 $NaBH(OAc)_3$ $Me_4NBH(OAc)_3$

Triacetoxyborohydrides are mild and selective reducing agents. Gribble has shown that aldehydes may be reduced in the presence of ketones with **sodium triacetoxyborohydride** (1). Saksena and Turnbull have demonstrated this reagent's ability to reduce cyclic β -hydroxyketones stereoselectively. Frank has reduced

acyclic β -hydroxyketones with high stereoselectivity employing **sodium triacetoxyborohydride** and **tetramethylammonium triacetoxyborohydride** (2). The latter reagent reduces ketones only if it can be directed by a hydroxyl group. In fact, these reactions may be run in a 1:1 acetone/acetic acid solvent mixture! Many other reductions with these reagents await discovery.

References:

(1) Gribble, G.W.; Ferguson, D.C. Chem. Commun. 1975, 535. (2) Saksena, A.K.; Mangiaracina, P. ibid. 1983, 24, 273. (3) Turnbull, M.D.; Hatter, G.; Ledgetwood, D.E. Tetrahedron Lett. 1984, 25, 5449. (4) Evans, D.A.; DiMarc, M. J. Am. Chem. Soc. 1986, 108, 2476. (5) Evans, D.A.; Chapman, K.T. Tetrahedron Lett. 1986, 27, 5939. (6) For a review of the uses of sodium triacetoxyborohydride, see Gribble, G.W.; Nutaitis, C.F. Org. Prep. Proced. Int. 1985, 17, 317.

31,639-3 Sodium triacetoxyborohydride (1) 25g \$12.00 100g \$32.00

31,736-5 Tetramethylammonium triacetoxyborohydride (2) 10g \$10.00; 50g \$27.00

We also list the following related reagent:

31,068-9 Tetramethylammonium borohydride

10g \$18.00 50g \$54.00

New Derivatives of Lithium Aluminum Hydride

$$Li^+$$
 [AIH (OCEt₃)₃] -

Lithium tri(tert-butoxy)aluminohydride is a widely used selective reducing agent. The above closely related reagent offers an even milder source of hydride for the chemoselective reduction of aldehydes even in the presence of unhindered ketones.

Krishnamurthy, S. J. Org. Chem. 1981, 46, 4628.

30,550-2 Lithium tris[(3-ethyl-3-pentyl)oxylaluminohydride, 0.5M solution in
tetrahydrofuran 100ml \$22.00
800ml \$141.00

$$Li^{+} \begin{bmatrix} i - Bu \\ H \end{bmatrix} Al (i - Bu)_{2}$$

This reagent has been used for the reduction of cyclic and bicyclic ketones to the corresponding thermodynamically less stable alcohols. Norcamphor was reduced to the endo alcohol in >99% stereoselectivity.

Kim, S.; Ahn, K.H.; Chung, Y.W. J. Org. Chem. 1982, 47, 4581.

30,327-5 Lithium tert-butyldiisobutylaluminohydride, 1.0M solution in petroleum ether 100ml \$17.00 800ml \$88.50

$$Li^{+} \begin{bmatrix} n-Bu \\ H \end{bmatrix} Al(i-Bu)_{2}$$

The above reagent selectively reduces enones, epoxides, disulfides and other functional groups.

Kim, S.; Ahn, K.H. J. Org. Chem. 1984, 49, 1717.

30,326-7 Lithium butyldiisobutylaluminohydride, 1.0*M* solution in hexanes 100ml \$14.00 800ml \$75.00



chemists helping chemists in research & industry

P.O. Box 355, Milwaukee, Wisconsin 53201 USA • (414) 273-3850