

BIOTECHNOLOGY

Edited by C. F. PHELPS
and P. H. CLARKE

The fourteen contributions forming this volume were presented at a London meeting of the Biochemical Society including the Society's Forty-Eighth Symposium 'Biotechnology', in December 1982. With today's increasing pressures to develop latest laboratory findings into practical industrial processes as quickly as possible the chosen theme of this Symposium was a timely one. The papers represent up-to-date reports from international biochemists whose work is of direct relevance to the wide areas of interests concerned with biotechnology, together with glimpses of the early development of its techniques and a look at its exciting future.

List of contents and authors:

Preface. How Biotechnology Developed at University College London by E. M. Crook. *The Future of Biotechnology* by P. Dunnill. *Carbohydrate Transformations by Immobilized Cells* by C. Bucke. *Biological Halogenation and Epoxidation* by S. L. Neidleman & J. Geigert. *High-Productivity Alcohol Fermentations using Zymomonas mobilis* by M. L. Skotnicki, R. G. Warr, A. E. Goodman, K. J. Lee & P. L. Rogers. *The Problem of Lignin Biodegradation* by L. Wallace, A. Paterson, A. McCarthy, U. Raeder, L. Ramsey, M. MacDonald, R. Haylock & P. Broda. *Special Bacterial Polysaccharides and Polysaccharases* by T. Harada. *A New Era of Exploitation of Microbial Metabolites* by A. L. Demain. *Industrial Prospects for Thermophiles and Thermophilic Enzymes* by B. S. Hartley & M. A. Payton. *Anaerobic Fermentations - Some New Possibilities* by J. G. Morris. *Xenobiotic Degradation in Industrial Sewage: Haloaromatics as Target Substrates* by H. J. Knackmuss. *Genetic Analysis and Manipulation of Catabolic Pathways in Pseudomonas* by P. R. Lehrbach & K. N. Timmis. *Plant Cell Cloning and Culture Products* by L. H. Jones. *A Hybrid Promoter and Portable Shine-Dalgarno Regions of Escherichia coli* by H. A. De Boer, L. J. Comstock, A. Hui, E. Wong & M. Vasser. *Subject Index.*

257 pp. ISBN 0 904498 15 8 £25.00 (US \$57.50)

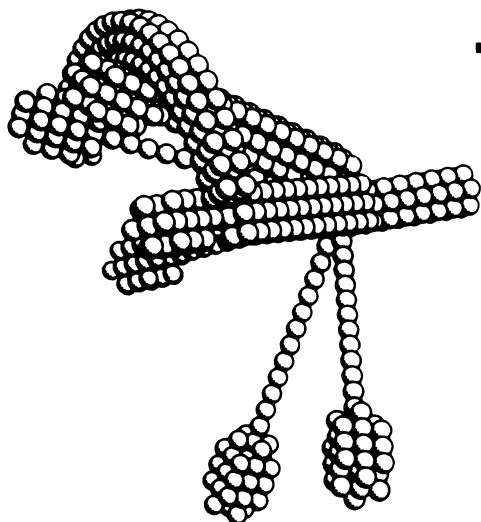


Order from
THE BIOCHEMICAL SOCIETY BOOK DEPOT
PO Box 32, Commerce Way, Colchester CO2 8HP, Essex, U.K.

BIOCHEMICAL SOCIETY SYMPOSIA NO. 49

Molecular Variants of Proteins

– Biosynthesis and Clinical Relevance



Edited by
P.N. CAMPBELL and
C.F. PHELPS

List of contents and authors:

Introduction by P. N. Campbell. *Structural Homology of Nicotinic Acetylcholine Receptor Subunits* by S. Numa. *Alternative RNA Processing Events as a Critical Developmental Regulatory Strategy in Neuroendocrine Gene Expression* by M. G. Rosenfeld, S. G. Amara & R. M. Evans. *Evolution in the Insulin Family: Molecular Clocks that Tell the Wrong Time* by M. Bajaj, T. Blundell & S. Wood. *The Molecular Pathology of Human α_1 -Antitrypsin* by R. W. Carrell, I. C. Bathurst & S. O. Brennan. *Collagen Gene Structure: the Paradox May be Resolved* by H. Boedtker & S. Aho. *Studies on Keratin Multigene Families* by G. E. Rogers. *The Interferons* by J. Taylor Papadimitriou. *Structure-Function Relationships in Immunoglobulins* by R. A. Dwek, B. J. Sutton, S. J. Perkins & T. W. Rademacher. *Muscle Protein Isoforms and Physiological Function: Role of Nerve in Gene Expression* by S. V. Perry, G. K. Dhoot & D. H. Heeley. *Calcium-dependent Proteinases and Specific Inhibitors: Calpain and Calpastatin* by T. Murachi. *The Biochemistry of Variant Surface Glycoproteins of the African Trypanosomes* by M. J. Turner. *The Implications of Genetic Variation in Human Pathology* by R. Williamson, K. E. Davies, J. Donald, C. Gilliam, S. Wallis & S. Humphries. *Subject Index.*

192 pp. ISBN 0 904498 16 6 £25.00 (US\$ 50.00)



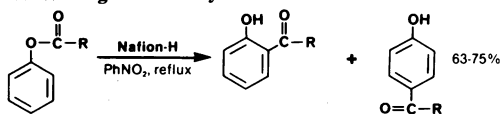
Order from
THE BIOCHEMICAL SOCIETY BOOK DEPOT
PO Box 32, Commerce Way, Colchester CO2 8HP, Essex, U.K.



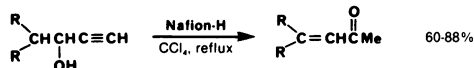
Nafion[®] Membranes and Related Versatile Heterogeneous Catalysts

Perfluorinated ion-exchange products* (hydrogen ion form) are solid, superacidic, perfluorinated resin-sulfonic acid catalysts useful in a variety of synthetic applications. They provide a number of advantages over conventional catalysts, including broader range of applications, improved yields, easy recovery, simplified workup, improved selectivity, and mild reaction conditions, as shown in the following examples.

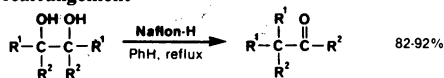
Fries rearrangement of aryl esters¹



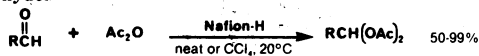
Rupe rearrangement of α -ethynyl alcohols to α,β -unsaturated carbonyl compounds²



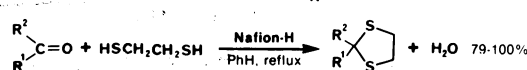
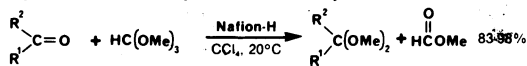
Pinacol rearrangement³



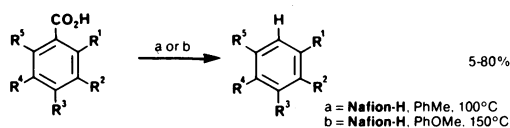
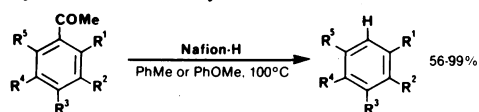
Preparation of gem-diacetates from the corresponding aldehydes⁴



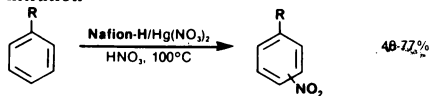
Synthesis of dimethyl acetals and ethylene dithioacetals⁵



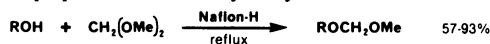
Deacetylation and decarboxylation of aromatics⁶



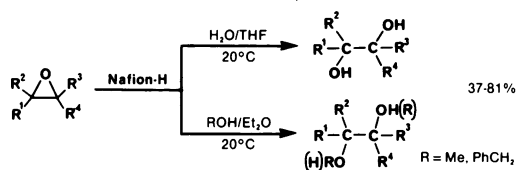
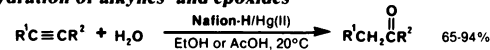
Aromatic nitration⁷



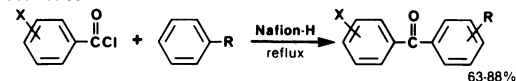
Facile preparation of methoxymethyl ethers⁸



Hydration of alkynes⁹ and epoxides¹⁰



Friedel-Crafts acylation of benzene and substituted benzenes¹¹



Nafion-H has also been shown to catalyze aromatic alkylations,^{12,13} Diels-Alder reactions,¹⁴ sequential aldol condensation/hydrogenation of ketones,¹⁵ photochemical ring contraction,¹⁶ esterification of carboxylic acids,¹⁷ and preparation of cyclic ethers from the corresponding diols.¹⁸

References:

- (1) Olah, G.A.; Arvanaghi, M.; Krishnamurthy, V.V. *J. Org. Chem.* **1983**, *48*, 3359.
- (2) Olah, G.A.; Fung, A.P. *Synthesis* **1981**, 473.
- (3) Olah, G.A.; Meidar, D. *ibid.* **1978**, 358.
- (4) Olah, G.A.; Mehrotra, A.K. *ibid.* **1982**, 962.
- (5) Olah, G.A.; Narang, S.C.; Meidar, D.; Salem, G.F. *ibid.* **1981**, 282.
- (6) Olah, G.A.; Laali, K.; Mehrotra, A.K. *J. Org. Chem.* **1983**, *48*, 3360.
- (7) Olah, G.A.; Krishnamurthy, V.V.; Narang, S.C. *ibid.* **1982**, 47, 596.
- (8) Olah, G.A.; Husain, A.; Gupta, B.G.B.; Narang, S.C. *Synthesis* **1981**, 471.
- (9) Olah, G.A.; Meidar, D. *ibid.* **1978**, 671.
- (10) Olah, G.A.; Fung, A.P.; Meidar, D. *ibid.* **1981**, 280.
- (11) Olah, G.A.; Malhoira, R.; Narang, S.C.; Olah, J.A. *ibid.* **1978**, 672.
- (12) Kaspi, J.; Montgomery, D.D.; Olah, G.A. *J. Org. Chem.* **1978**, *43*, 3147.
- (13) Olah, G.A.; Kaspi, J.; Bukala, J. *ibid.* **1977**, *42*, 4187.
- (14) Olah, G.A.; Meidar, D.; Fung, A.P. *Synthesis* **1979**, 270.
- (15) Pittman, Jr., C.U.; Liang, Y.F. *J. Org. Chem.* **1980**, *45*, 5048.
- (16) Childs, R.F.; Mika-Gibala, A. *ibid.* **1982**, *47*, 4204.
- (17) Olah, G.A.; Keumi, T.; Meidar, D. *Synthesis* **1978**, 929.
- (18) Olah, G.A.; Fung, A.P.; Malhoira, R. *ibid.* **1981**, 474.

- 27,467-4 Nafion[®] 117, perfluorinated membrane, 0.007in. thick **1ea (8 x 10in.) \$89.00**
- 27,468-2 Nafion[®] 417, perfluorinated membrane, reinforced with Teflon[®], 0.017in. thick **1ea (4 x 5in.) \$27.50**
- 27,469-0 Perfluorinated ion-exchange powder, † 35-60 mesh **5g \$36.00**
- 27,470-4 Perfluorinated ion-exchange powder, † 5 wt. % solution in a mixture of lower aliphatic alcohols and 10% water **25ml \$22.00**
100ml \$79.00
- 27,673-1 Perfluorinated ion-exchange powder, † 10-35 mesh **5g \$36.00**
- 27,675-8 Perfluorinated ion-exchange powder, † 60-100 mesh **5g \$36.00**

*Formerly sold as Nafion[®]-H by E.I. Du Pont de Nemours & Co.

†Registered trademark of E.I. Du Pont de Nemours & Co.

†Prepared from Nafion 117 perfluorinated membrane.



chemists helping chemists in research & industry

aldrich chemical co.

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