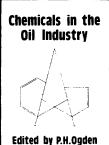


# **Chemicals in the Oil Industry**



Edited by P. H. Ogden

Chemicals in the Oil Industry discusses some of the problems associated with oil production, particularly where the use of chemical additives is concerned. This book sets out to define those problems which can be solved through the use of chemical additives, the type of chemical currently favoured, the level of service required to supply such chemicals effectively to the oil industry, the volume of chemicals used, and the financial outlay required of the oil producer.

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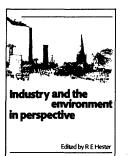
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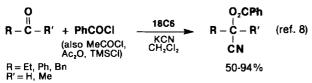


Since their serendipitous discovery in 1967, ' crown ethers (CE's<sup>2</sup>) have received increasing attention.<sup>3</sup> The unique ability of CE's to bind specific cations (or Lewis acids) has generated a diversity of applications spanning every area of chemistry.

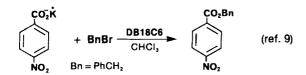
Analytical chemists have employed CE's as neutral carriers in ion-selective electrodes,4 stationary phases in HPLC,<sup>5</sup> in the extraction spectrophotometry of sodium and potassium ions in blood serum,<sup>6</sup> and for the enhancement of CIMS spectra of certain organic molecules.7

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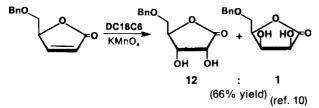
### **Cyanohydrin Synthesis**



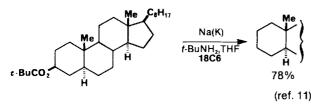
## Esterification



## **Butenolide** Oxidation

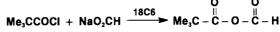


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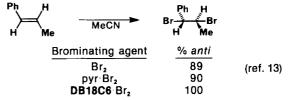
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# Mixed-Anhydride Synthesis



reagent for N-formylation (ref. 12)

**Bromination** 



A large amount of work has been directed toward elucidating the nature of CE complexes; substrates include tin,<sup>14</sup> methylammonium<sup>15</sup> and hydronium ions,<sup>16</sup> and the more common Group I metals.

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#### References:

(1) For an interesting account by the discoverer, see Pedersen, C.J. Aldrichim. Acta 1971, 4, 1. (2) Standard CE abbreviations: 12C4=12crown-4 (similarly for 15C5 and 18C6), DB = dibenzo, DC = dicyclohexano. (3) Gokel, G.W.; Durst, H.D. Aldrichim. Acta 1976, 9, 3. Hiraoka, M. "Studies in Organic Chemistry, Vol. 12. Crown Compounds. Their Characteristics and Applications"; Elsevier: Amsterdam, Netherlands, 1982. (4) Shono, T. Kayaku Kogyo 1982, 33, 524; Chem. Abstr. 1983, 99, 155381c. (5) Kimura, K.; Shono, T. J. Liq. Chromatogr. 1982, 5, (Suppl. 2), 233. (6) Nakamura, H. et al. Anal. Chim. Acta 1982, 139, 217. (7) Bose, A.R. et al. J. Org. Chem. 1983, 48, 1780. (8) Chenevert, R. et al. Synth. Commun. 1983, 13, 403. (9) Wong, K.-H.; Wai, A.P.W. J. Chem. Soc., Perkin Trans. 2 1983, 317. (10) Mukaiyama, T. et al. Chem. Lett. 1983, 173. (11) Barrett, A.G.M. et al. J. Chem. Soc., Perkin Trans. 1 1981, 1501 and refs. cited therein. (12) Vlietstra, E.J. et al. Recl.: J. R. Neth. Chem. Soc. 1982, 101, 460. (13) Pannell, K.H.; Mays, A.J. J. Chem. Soc., Perkin Trans. 1 1982, 2153. (14) Smith, P.J.; Patel, B.N. J. Organometal. Chem. 1982, 243, C73. (15) Spek, A.L. et al. Cryst. Struc. Commun. 1982, 11, 1863. (16) Kolthoff, I.M. et al. Anal. Chem. 1983, 55, 1202.

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