

observed with Co(IV), Pb(IV), Mn(III), Ce(IV), Cu(II) etc¹¹. It would, therefore, be of interest and possibly profitable to speculate upon the emergence of a host of reagents as strong one-electron oxidants in the said solvent system. Work in this direction is in progress.

1 April 1986

1. Foster, R., In: *Organic charge transfer complexes*, Academic Press, London, 1969.
2. Foster, R. and Hanson, P., *Biochim. Biophys. Acta*, 1961, **47**, 596.
3. Beresford, P., Ales, D. H., Krika, L. J. and Ledwith, A., *J. Chem. Soc. Perkin Trans. 1*, 1974, 276.
4. Sep, W. J., Verhoeven, J. W. and DeBoer Th. J., *Tetrahedron*, 1979, **35**, 2161.
5. Ebersson, L., *Adv. Phys. Org. Chem.*, 1982, **18**, 79.
6. Handoo, K. L., Handoo, S.K., Gadru, K. and Kaul, A., *Tetrahedron Lett.*, 1985, **26**, 1765.
7. Paul, M. A. and Long, F. A., *Chem. Rev.*, 1957, **57**, 1.
8. Nepras, M., Kratochvil, V., Titz, M., Novak, A. and Slavik, V., *Coll. Czech. Chem. Commun.*, 1973, **38**, 1003.
9. (a) Norman, R. O. C., Thomas, C. B. and Willson, J. S., *J. Chem. Soc. B*, 1971, 518; (b) Partch, R. E., *J. Am. Chem. Soc.*, 1967, **89**, 3662; (c) Kochi, J. K., Tang, R. T. and Bernath, T., *J. Am. Chem. Soc.*, 1973, **95**, 7114.
10. Bard, A. J., Ledwith, A. and Shine, H. J., *Adv. Phys. Org. Chem.*, 1976, **13**, 155.
11. (a) Heiba, E. I., Dessau, R. M. and Koehl, Jr. W. J., *J. Am. Chem. Soc.*, 1969, **91**, 138, 6830; (b) Heiba, E. I. and Dessau, R. M., *J. Am. Chem. Soc.*, 1971, **93**, 995.
12. Das, M. and Basu, S., *Spectrochim. Acta*, 1961, **17**, 897.
13. Sehested, K. and Hart, H. J., *J. Phys. Chem.*, 1975, **79**, 1639.
14. Shida, T. and Hamill, W. H., *J. Chem. Phys.*, 1966, **44**, 2375.
15. Zarubin, M. Ya., Kutnevich, A. M. and Rudenko, A. P., *Zh. Org. Khim.*, 1975, **11**, 1284.

POLYMER SUPPORTED PERIODATE: CONVENIENT METHOD FOR OXIDATION OF HYDRAZIDES

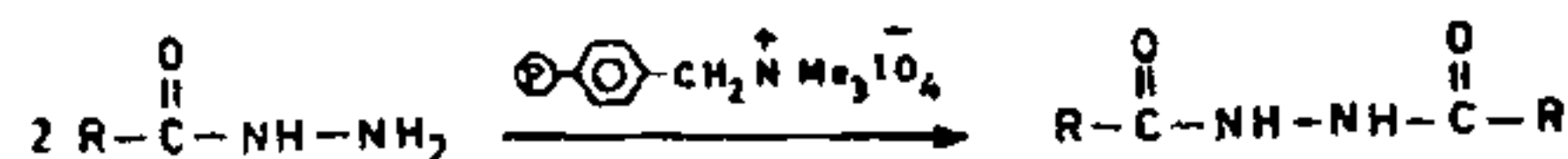
D. G. SALUNKHE, M. H. JAGDALE, S. S. SWAMI and M. M. SALUNKHE*

Department of Chemistry, Shivaji University, Kolhapur 416 004, India.

EARLIER work on the oxidation of the hydrazides reveals that they can be oxidized to 1,2 diacyl hydrazines with diphenyl selenoxide¹, benzene selenic acid² and with aryl sulphonyl peroxides³. However, in all these methods reported, the side products which were formed result in low yields of 1,2 diacyl hydrazines.

Recently Hodge⁴ reported polymer-supported periodate as a good oxidizing agent in the range of solvents and oxidized various quinols, catechols, glycols, triphenyl phosphine, hydrazobenzene and benzohydroxamic acid.







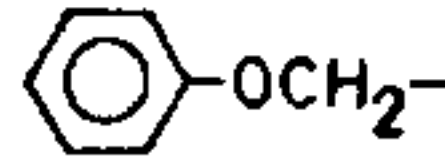
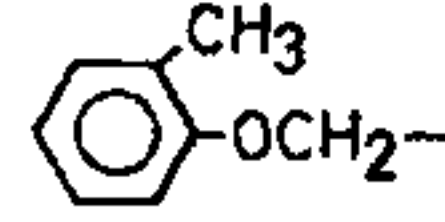

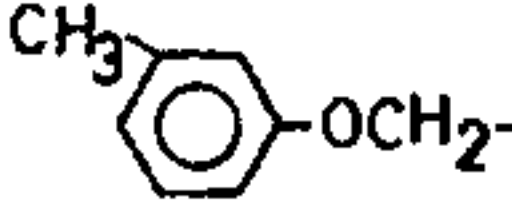
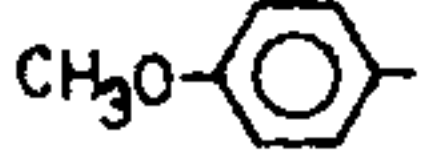
In continuation of our work on polymer-supported reactions^{5,6} we now report the oxidation of hydrazides with polymer-supported periodate to 1,2 diacyl hydrazines in high yields and purity. The products of the reaction with polymer-supported periodate were isolated simply by filtering off the resin and evaporating the solvent from the filtrate. Thus the method has advantage in terms of yields and simplicity of the performance.



Interestingly this method is inexpensive as the resin could be used repeatedly since it can be regenerated to its initial activity by treatment with dilute hydrochloric acid.

All melting points were taken in open capillaries and were uncorrected. The purity of the compound was checked on silica gel TLC plates using iodine vapours as developer. IR and NMR spectra were recorded on Perkin Elmer spectrometer. NMR spectra were taken in DMSO-D6 using TMS as internal reference.

Polymer-supported periodate: The chloride form of Amberlyst A26 (25 g damp) was stirred for 6 hr with sodium periodate (20 g) in water at 20°C. The liquid was decanted off and the resin was treated with a fresh solution of sodium periodate (20 g) in water (200 ml). The resin was then filtered off and washed successively with water (4 × 200 ml), tetrahydrofuran (2 × 100 ml)

$\text{R}-\overset{\text{O}}{\parallel}{\text{C}}-\text{NH}-\text{NH}-\overset{\text{O}}{\parallel}{\text{C}}-\text{R}$			
	R	Yield %	M. P. °C
1		95	240 (lit.241)
2		95	220
3		92	225
4		90	280
5		90	241
6		90	250
7		92	190
8		90	140
9		90	175
10		92	185
11		90	210

and ether (2 × 100 ml) and dried overnight at 40°C and 1 mm Hg.

Capacity was determined by iodometry and was found to be 2.5 mmol.

Oxidation of hydrazides: Hydrazide (5 mmol) in ethanol (50 ml) was stirred with the periodate form of Amberlyst A26 (5.5 mmol) for 6 hr at room temperature. After completion of the reaction, the resin was filtered off and washed with ethanol (150 ml). The distillation of the combined filtrate furnished corresponding diacyl hydrazines essentially in pure form. The products were characterized by NMR, IR, mass spectral studies, C, H, N analysis and comparison with authentic samples.

One of us (DGS) is grateful to UGC, New Delhi and S Bri Swami Vivekanand Shikshan Sanstha, Kolhapur for financial support.

4 April 1986

I. Balenovic, K., Lazic, R., Polak, V. and Stern, P.,

Bull. Sci. Sect. A (Zagreb), 1972, 17, 147.

2. Back, T. G., Collins, S. and Kerr, R. G., *J. Org. Chem.*, 1981, 46, 1564.

3. Hoffman, R. I. and Anil Kumar, *J. Org. Chem.*, 1984, 49, 4014.

4. Harrison, C. P. and Hodge, P., *J. Chem. Soc. Perkin I*, 1982, 509.

5. Sande, A. R., Jagdale, M. H., Mane, R. B. and Salunkhe, M. M., *Tetrahedron Lett.*, 1984, 25, 3501.

6. Deshmukh, J. G., Jagdale, M. H., Mane, R. B. and Salunkhe, M. M., *Syn. Comm.*, 1986, 16, 479.

OPTICAL PROPERTIES OF LEAVES OF SOME INDIAN PLANTS

D. W. LEE, K. P. PALIWAL*, K. A. PATEL** and D. N. SEN†

Department of Biological Sciences, Florida International University, Miami, Florida, USA.

*School of Biological Sciences, Madurai Kamaraj University, Madurai 625 021, India.

** Botany Department, Bhavan's College, Andheri West, Bombay 400 058, India.

† Botany Department, University of Jodhpur, Jodhpur 342 001, India.

LEAVES function as optical filters, selectively absorbing different wavelengths of electromagnetic radiation¹⁻³. Leaf optical properties vary, depending upon the environments in which the plants live. These properties must be measured if the photosynthetic efficiencies⁴ and the thermal properties and thus water relations⁵ of individual species are to be understood. Of the few species measured^{2,6,7}, none are native to the Indian subcontinent. Here we report the leaf optical properties of 22 taxa native to different vegetation types of India.

Leaves were collected from trees of: (1) a wet evergreen forest in Kanyakumari district of South India (lat. 8° 28' N, long. 77° 18' E—KK); (2) a moist deciduous forest in the Thane District of Maharashtra (lat. 19° 13' N, long. 73° 01' E—TD); and desert plants from the Botanical Garden of the University of Jodhpur (lat. 26° 17' N, long. 73° 02' E—JP). Mature, sun-exposed leaves were collected and kept moist, and measured within 2 hr of collection. Measurements were performed with a Li-Cor #1800 spectroradiometer (Li-Cor Instruments, Lincoln, Nebraska, U.S.A.) with integrating sphere attachment. Diffuse