

where the anilide is converted into the sodium derivative by boiling with powdered sodium in dry benzene for a number of hours and then heated with the halogen compound. In the absence of BTEAC catalyst, the method of alkylation by the present procedure fails.

The authors wish to thank Prof. K. K. Mathew and Prof. N. V. Subramanian for their interest in the work.

Maharaja's College,
Cochin-11,
March 30, 1979.

P. S. RAMAN.
M. A. ASHROF.

1. Langley Searles, A. and Lindwall, H. G., *J. Am. Chem. Soc.*, 1946, 68, 988.
2. Raman, P. S., *Proc. Indian Acad. Sci.*, 1958, 47, 244.
3. Weber, W. P. and Gokel, G. W., *Phase Transfer Catalysis in Organic Synthesis*, Springer-Verlag, 1978, p. 140.
4. Yo Mori, Susumu Mihashi and Tatsuo Ohta, *Chem. and Ind.*, 1959, p. 1160.

A METHOD FOR DECOMPOSITION OF CHROMITE FOR ANALYSIS BY ATOMIC ABSORPTION SPECTROPHOTOMETRY

CHROMITE is a highly refractory mineral. Several methods¹⁻¹⁰ are described in literature for its decomposition for analysis. Methods based on fusion with sodium salts are unsuitable for atomic absorption spectrophotometric determinations due to excessive radiation effect of high sodium content of solution. Other methods involving digestion with acids have been found time consuming/cumbersome for AAS studies on chromites and chrome ores.

A rapid method has been developed for dissolution of chromite without using sodium carbonate/peroxide. Finely powdered chromite ore is fused with a mixture of potassium pyrosulphate and potassium persulphate. A complete decomposition of the sample takes 3-5 minutes. Fusion with potassium pyrosulphate and ammonium nitrate has also been found quite effective. This method requires slow initial fusion at a low temperature to avoid loss of sample due to frothing.

Procedure: The powdered (-200 mesh) sample (0.1 g) is weighed into a hard glass test-tube to which 1 g of potassium pyrosulphate and 0.5 g potassium persulphate are added, mixed thoroughly and heated slowly to dull red heat.

The fused mass is dissolved in 15-20 ml of 1:1 hydrochloric acid by heating the tube on a burner at a low flame to separate the fused sample from the sides of the tube. The tube is kept in a boiling water bath for complete digestion and settling. Then the

supernatant liquid is carefully transferred to a 50 ml volumetric flask. Residue in the test-tube is treated with 2 ml of 50% potassium hydroxide solution and gently boiled. 15-20 ml of 2N hydrochloric acid are added at a time. If any part of the precipitate is not dissolved, the precipitate is settled and the supernatant liquid transferred to the same flask. The precipitate is once again treated with 2 ml of 50% potassium hydroxide and warmed, followed by dissolving the precipitate with 2N hydrochloric acid. (If any precipitate still persists, it is only due to the free insoluble silica, in the form of quartz, which cannot be dissolved by an acidic fusion. The second treatment with alkali, in case if any precipitate still persists after the first treatment, is necessary to ensure that all sulphates of the metallic ions go into solution). This is transferred to the main solution and made up to the mark with 2N HCl after washing the tube 3-4 times with 2N hydrochloric acid. This solution is used for the determination of Cr, total Fe, Al, Ca, Mg, Ti, soluble silica, Cu, Ni, Co, V, etc., by atomic absorption spectrophotometry, with suitable dilution as necessary.

The above method of sample decomposition has been successfully tried on a fairly wide variety of chrome ore samples. Samples from Byrapur, Karnataka; Nausahi, Keonjhar Dist., Orissa; and Cuttack Dist., Orissa; responded well to this method of dissolution.

Chemical Division, P. D. MALHOTRA.
A.M.S.E. Wing, P. P. NAIDU.
Geological Survey of India, T. J. PANDURANGA RAO.
428, 5th Block, Jayanagar,
Bangalore 560 041,
February 3, 1979.

1. Treadwell, F. P. and Hall, W. T., *Analytical Chemistry*, John Wiley and Sons, Inc., New York, 1948, 2.
2. Hillebrand, W. F., Dundell, G. E. F., Bright, H. A. and Hoffman, J. L., *Applied Inorganic Analysis*, John Wiley and Sons, Inc., New York, 1955.
3. Maxwell John, A., *Rock and Mineral Analysis*, Interscience Publishers, Division of John Wiley and Sons, New York, 1968, 27.
4. Ryan, D. E., *Analyst*, 1960, 85, 569.
5. Sarudi, I., *Z. Anal. Chem.*, 1958, 163 (1), 34.
6. Dinnin, J. I., *U.S. Geol. Survey Bull.*, 1959, 1084-B, 31.
7. Smith, G. F. and Getz, C. A., *Ind. Eng. Chem. Anal. Ed.*, 1937, 9, 518.
8. Balyuk, S. T. and Zilberg, E. S., *Ogneupory*, 1963, 8, 378; cf. *Analyt. Abstr.*, 1964, Abstr. No. 5451.
9. Van der Walt, C. F. J., *Analyst*, 1938, 63, 176.
10. Rodgers, K. A., *Mineralog. Mag.*, 1972, 38, 882.