from thiocyanate was 4.32 min and the resulting peak was uniform and symmetrical with no tailing (figure 1). Several concentrations of thiocyanate, ranging from 0.05 to 10 mg%, were used and a standard graph of area counts vs concentration was plotted; this is linear, as seen in figure 2. As the concentration of thiocyanate in the reaction mixture increased from 0.05 to 5 mg%, the variation coefficient decreased from 6.57 to 1.30% ($n = 10$ for each of the 5 test concentrations). The detector response was checked for every set of analyses by testing one or two known concentrations, allowing a tolerance limit of $\pm 10\%$. This response factor was used in analysis of samples of urine for thiocyanate levels.

Recovery experiments were carried out by adding known amounts of standard thiocyanate to urine, or cyanide to urine made alkaline. Recovery was 90–95% (table 1) and reproducibility 95–100%. Background cyanide levels in urine would not have any significant effect on the results, being in negligible amount (0.005 mg%)[7]. Phenols, keto acids, sodium thiosulphate, vitamin $B_{12}$ and desprin did not interfere with the assay. In the case of normal urine samples no remarkable difference was noted in thiocyanate values (SD of differences was 0.041 and $t$ was 0.91) determined spectrophotometrically using Bowler's method followed by Denson *et al.*[8] and by the present GC method (figure 3). However, abnormal urine samples, characterized either by the presence of turbidity or by a colour other than the specific red colour of ferric thiocyanate with ferric nitrate reagent, gave lower values by the present method. Urine samples in which thiocyanate could not be estimated by Bowler's method could be analysed by the GC method (table 2).

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1. Bowler, R. G., *Biochem. J.*, 1944, **38,** 385.
2. Goldstein. P., *J. Biol. Chem.*, 1950, **187,** 523.
3. Boxer, G. E. and Rickards, J. C., *Arch. Biochem.*, 1952, **39,** 292.
4. Aldridge, W. N., *Analyst*, 1945, **70,** 474.
5. Thuerkow, B. and Weuffen, W., *Pharmazie*, 1980, **35,** 475.
6. McAuley, F. and Reive, D. S., *J. Anal. Toxicol.*, 1983, **7,** 213.
7. Boxer, G. E. and Rickards, J. C., *Arch. Biochem.*, 1951, **30,** 372.
8. Denson, P. M., Davidow, B., Bass, H. E. and Jones, E. W., *Arch. Environ. Health*, 1967, **14,** 865.

## ANNOUNCEMENTS

**Seminar on Academy–Industry Interaction in Agriculture Biotechnology**

Place: Indian Institute of Science, Bangalore
Date: 1 December 1989
Contact: The Secretary
Centre for Advancement of Biotechnology
c/o Vittal Mallya Scientific Research Foundation
K. R. Road
P.O. Box 406
Bangalore 560 004

**Solid State Physics Symposium**

Place: IIT, Madras
Date: 19–22 December 1989
Contact: Prof. R. Srinivasan
Convener, SSP Symposium
Dept of Physics
Indian Institute of Technology
Madras 600 036

**National Seminar on Chemical Physics**

Place: Pondicherry University, Pondicherry
Date: 9–11 February 1990
Contact: Prof. A. Srinivasa Rao
Chairman, NSCP
Raman School of Physics
Pondicherry University (JIPMER Campus)
Pondicherry 605 006
Abstracts by 15 December, full papers by 15 January 1990.