Report by the Analytical Methods Committee

Evaluation of Analytical Instrumentation. Part IV. Monochromators for Use in Emission Spectrometry with ICP Sources

Feature	Definition and/or test procedures and guidance for assessment	Importance	Reason	Score				
2. *Wavelength range*	(*a*) The instrument *must* cover the spectral range which encompasses the lines of interest to the user. (*b*) Score additionally for an	VI NVI	Whilst it is obviously necessary for the user to be able to access the lines of interest, it is advantageous to be able to select other lines of interest,	PS WF ST				

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7. *Light gathering*	This is the minimum amount of	I	The light gathering power of the	PS				

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11. *Slit geometry and selection*	Vertical rather than horizontal slits are more compatible with the plasma source geometry. Preference should be given to	I	The region of maximum signal to background ratio in a plasma source is a small vertical region which is readily matched by	PS WF ST				

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	to set the wavelengths for background correction.							
16. *Dynamic range and mode of integration*	Maximum score should be given for digital integration, with the greatest linear dynamic range.	VI	For the stable signal produced by the ICP, digital integration following A–D conversion is the most accurate method. The source has a linear dynamic range of 5–6 orders of magnitude and the integrator should at least match this.	PS WF ST				
17. *Speed of quantitative analysis*	This is mainly determined by the "washout" time of the nebuliser/spray chamber employed. This can be evaluated by measuring the time for the signal for 1000 p.p.m. of manganese or other suitable element, to decay to a level at which it has no statistically significant effect upon the precision or accuracy of the measurement of a 1 p.p.m. solution. This parameter must be used with caution as the use of a different nebuliser/spray chamber may significantly change the assessment.	I	Instruments for routine use may require a high sample throughout for economic reasons. It is essential that any such required rate can be met by the instruments under consideration.	PS WF ST				
18. *Overall*	A test procedure is outlined in	VI	Evaluation of the overall	PS				

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(*f*) Training	Enquire as to local	I	Availability of efficient	PS				

be compared by means of multi-tailed "F-test" (or analysis of co-variance) using the residuals.

Short-term precision should be evaluated by calculating the

the RSD of $x - b = 50\%$ and is accepted for the purposes of this document. However, the actual definition is unimportant, provided that it is consistently applied. The analytical range