

Department of Analytical Methods Committee

Evaluation of Analytical Instrumentation. Part VI Wavelength Dispersive X-ray Spectrometers

Analytical Methods Committee

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A method is provided for comparing the features of wavelength dispersive X-ray spectrometers.

The Analytical Methods Committee has received and fluorescence spectrometers that are designed for use as

INSTRUMENTAL CRITERIA SUB-COMMITTEE INSTRUMENT EVALUATION FORM

Type of Instrument: Wavelength dispersive X-ray spectrometer

Manufacturer:

Model No:

Definition and/or test
procedures and evidence

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Feature	Definition and/or test procedures and guidance for assessment	Importance	Reason	Score				
2. <i>Sample changer and presentation</i> (a) Number of samples (i) Internal	Score maximum for the	I	If more than two positions are					

Feature	Definition and/or test procedures and guidance for assessment	Importance	Reason	Score				
(d) Positioning and alignment of sample	Score maximum for the best mechanical precision obtained when presenting a sample in each position of the carousel and in each specimen holder.	VI	Discrepancies in the mechanical alignment will affect precision of measurements, particularly as de-focusing can occur when a fine collimator is used. Any displacement (height, angular or lateral) of the sample will affect both excitation and counting efficiency, causing distortions to the measured	PS WF				

Feature	Definition and/or test procedures and guidance for assessment	Importance	Reason	Score				
(ii) Angular	Score maximum for the	I	Wide angular movement					

Feature	Definition and/or test procedures and guidance for assessment	Importance	Reason	Score				
(iii) Sealed proportional counters	Score maximum for the highest count rate and resolution for $K\alpha$ lines for $z = 22$ (Ti) to $z = 33$ (As).		The provision of a sealed counter improves the performance of the instrument in the middle wavelength range and is of particular benefit if no facility for tandem operation of the scintillation and flow proportional counters is available.	PS WF ST				

4. Electronics

Feature	Definition and/or test procedures and guidance for assessment	Importance	Reason	Score				
5. <i>Computer</i> (a) <i>Automation</i> (i) <i>Instrument control</i>	Score maximum for the greatest number of instrument features which are under computer control.	VI	Computer control of instrumental parameters ensures reliable and reproducible operation of the instrument by well trained, but non expert operators. This					

Definition and/or test procedures and guidance							
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Also calculate the factor (F) (often referred to as a figure of merit) which is used for optimising instrument operating conditions.

under conditons of high resolution is invariably accompanied by a reduction in measured count rates. Unlike atomic emission applications, spectrometers that are designed to give best resolution will not necessarily give optimum over all