INSTRUMENTAL CRITERIA SUB-COMMITTEE INSTRUMENT EVALUATION FORM

Type of Instrument: Wavelength dispersive X-ray spectrometer

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Manufacturer: | | | | | | | | |
| Model No: | | | | | | | | |
| | Definition and/or test procedure and guidance | | | | | | | |

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|---|---|---|---|---|---|---|---|---|
| 2. *Sample changer and presentation* | | | | | | | | |
| (*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 alterations to the measured | PS WE | | | | |

| 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 Kα 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<br>WF<br>ST | | | | |
| 4. *Electronics* | | | | | | | | |

| Feature | Definition and/or test procedures and guidance for assessment | Importance | Reason | Score | | | | |
|---|---|---|---|---|---|---|---|---|
| 5. *Computer*<br>(*a*) Automation<br>(*i*) Instrument control | Score maximum for the greatest number of instrument features which are under computer | VI | Computer control of instrumental parameters ensures reliable and | | | | | |

| | Definition and/or test procedures and guidance | | | | | | | |
|---|---|---|---|---|---|---|---|---|

Also calculate the factor ($F$) (often referred to as a figure of merit) which is used for optimising instrument operating

under conditons of high resolution is invariably accompanied by a reduction in measured count rates. Unlike atomic