The Analyst
AMC PAPER

Report by the Analytical Methods Committee
Evaluation of analytical instrumentation.
Part XII. Instrumentation for capillary electrophoresis

Analytical Methods Committee†

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†The Analytical Methods Committee has received and approved the following report from the Instrumental Criteria Sub-Committee.

Introduction

The following report was compiled by the above Sub-Committee of the AMC, which consisted of Professor S. Greenfield (Chairman), Professor L. N. Miller, Dr P. J. Potts, Mr D. C. M. Squirrell, Dr C. Burgess, Dr K. E. Jarvis, Dr S. J. Hill and Dr K. D. Altria, with Mr C. A. Watson as Honorary Secretary. The initial input of the features for consideration was undertaken by a working party chaired by Dr K. D. Altria with Mr G. S. Clarke and Professor D. Perrett, to whom the committee expresses its thanks.

The guidelines are intended to be used as a check list of features to be considered, mostly of the instrument itself, but some also of its service requirements and of the relationship of the user with the manufacturer. Their relative importance will depend on the installation requirements of the instrument as well as the uses to which it will be put. Therefore, to some extent, the selection process will inevitably be subjective, but if all the points have been considered, it should be an informed choice.

In addition, because a separation depends so much on the capillary, electrolyte and operating conditions, it may sometimes be difficult to assess the actual operating performance of a particular feature from the manufacturer's specificatons. For some applications it may be necessary to evaluate the performance of the instrument under consideration using the system suitability test mixture chosen for a particular application. The purpose of this is to demonstrate the systems ability to perform a critical separation. CE instruments are often sold as complete systems, so that compromises between features may have to be accepted, but it will still be important to distinguish between critical features and those which are optional.

The Committee consider that, in general, CE equipment is safe in normal use, but suitable precautions should be taken when handling flammable solvents. In addition, eye protection should be worn when aligning or changing UV lamps or capillaries.

Finally, as many laboratories are now working to quality standards such as GMP/GLP/NAMAS/ISO Guide 25, some consideration should be given to third party recognition of the manufacturer to standards such as ISO 9001. Such accreditation should extend to the service organisation, which is particularly important when working to NAMAS or GLP criteria.

Previous reports in this series from the Analytical Methods Committee

Evaluation of analytical instrumentation

Part I Atomic-absorption Spectrophotometers, Primarily for use with Flames, *Anal. Proc.*, 1984, **21**, 45. Revised 1997. *Analyst*, 1998, **123**, 1406.

Part II Atomic-absorption Spectrophotometers, Primarily for use with Electrothermal Atomisers, *Anal. Proc.*, 1988, **22**, 128. Revised 1997. *Analyst*, 1998, **123**, 1415.

Part III Polychromators for use in Emission Spectrometry with ICP Sources, *Anal. Proc.*, 1986, **23**, 109.

Part IV Monochromators for use in Emission Spectrometry with ICP Sources, *Anal. Proc.*, 1987, **24**, 3.

Part V Inductively Coupled Plasma Sources for use in Emission Spectrometry. *Anal. Proc.*, 1987, **24**, 266.

Part VI Wavelength Dispersive X-ray Spectrometers, *Anal. Proc.*, 1990, **27**, 324.

Part VII Energy Dispersive X-ray Spectrometers, *Anal. Proc.*, 1991, **28**, 312.

Part VIII Instrumentation for Gas–Liquid Chromatography, *Anal. Proc.*, 1993, **30**, 296.

Part IX Instrumentation for High Performance Liquid Chromatography, *Analyst*, 1997, **122**, 397.

Part X Inductively Coupled Plasma-Mass Spectrometers, *Analyst*, 1997, **122**, 393.

Part XI Instrumentation for Molecular Fluorescence Spectrometry, *Analyst*, 1998, **124**, 1649.

Instrumental criteria sub-committee evaluation form

Type of instrument: Capillary electrophoresis						
Manufacturer:						
Model No.:						
Feature	Definition and/or test procedures and guidance for assessment	Importance	Reason	Score		
Non-instrumental criteria						
Selection of manufacturer	Laboratories in possession of other CE systems should score highest for the manufacturer with the best past record based on the following sub-features:					
(*a*) Previous instruments						
(*i*) Innovation	Company's record for developing instruments with innovative features.	I	The manufacturer should be alert to developments in technology and electrophoresis.	PS WF ST		
(*ii*) Reliability record	Company's record for instrument reliability.	I	Indicates history of sound design/ manufacturing concepts.	PS WF ST		
(*iii*) Similarity of operation, layout and design to existing instruments in the laboratory	For routine purposes this may be important. However, this may be less important for research applications.	I	Similarity of layout means that operators can draw on in-house expertise, resulting in reduced training costs and time. It may also maximise the use of spares and fittings.	PS WF ST		
(*iv*) Confidence in the supplier	Confidence gained from past experience.	I	Good working relationship already in place.	PS WF ST		
(*b*) Servicing	Score according to manufacturers' claims and past record, judged by the sub-features (*i*)–(*v*) below:					
(*i*) Service contract	Availability of suitable service contracts from the supplier, agent or third party contractor.	VI	Suggests long term commitment to user. Often ensures preferential service and guarantees a specific response time to call-outs.	PS WF ST		

Feature	Definition and/or test procedures and guidance for assessment	Importance	Reason	Score
(*ii*) Availability and delivery of spares	Range of stock carried by, or quickly			

Feature	Definition and/or test procedures and guidance for assessment	Importance	Reason	Score
3. Liquid handling systems				
(*a*) Instrument control	Score highest for instruments which allow adequate software control of all key operaional functions.	VI	Software control facilitates method compliance.	PS WF ST
(*b*				

Feature	Definition and/or test procedures and guidance for assessment	Importance	Reason	Score