Evaluation of analytical instrumentation

Part XXIV. Instrumentation for quadrupole inductively coupled plasma mass spectrometry

Received 14th June 2010, Accepted 14th June 2010 DOI: 10.1039/c005443g

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Introduction

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- . A. . . . C.
- J , A a. P c., 1984, 21, 43. 1998, **123**. 1407.
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- 1 1. 1 IC , A a. P c., 1986, 23, 109.
- J.I. J. J. J. J. 1 1. 1 LIC J, A a. P c., 1987, 24, 3.
- A. I. B. B. B. B. A. F. 1
- *i j* , *A a* . *P c*., 1987, **24**, 266.
- $\mathcal{J} = \mathbf{I}, \quad \mathcal{J} = \mathcal{J} + \mathcal{J} +$ P c., 1990, 27, 324.
- *J*, *A a*. *P c*., 1991, **28**, 312.
- I III. I James Jack, C. Jack, *A a* . *P c*., 1993, **30**, 296.
- . J. J. A. a , 1997, **122**, 387.
- J. I. F. D. F. F. C. *i j* , *A* a , 1997, **122**, 393.
- , **J** I. I **J** . . . **J** .
- *A a* 7, 2000, **125**, 361.
- *A a* 7, 2000, **125**, 367.
- *i j* , *A* a , 2000, **125**, 37**i**.
- $\mathcal{J} = \mathcal{J} =$
- Ac ed. Q a. A ., 2006, 11, 130. Acc ed. Q a. A ., 2006, **11**, 130.
- 1 * *
- , 1 III. 5 1 , . . . 1. 1, Acc ed. Q a. *A* ., 200**2**, **10**, 160.
- , I. CH, . . . J, Acc ed. Q a. A ., 2006, 11, \$69.
- 17 *i*, *j*, *Acc ed. Q a*. *A* ., 2006, **11**, 610. IN I J. . JWJ J., Acc ed.
- Q a. A ..., 2006, 11, 236. 1 1 f, Acc ed. Q a. A ., 2007, **12**, 3.
- J III. J., F J., Acc ed. Q a. *A* ., 2008, **13**, 4**3**.

An overview of inductively coupled plasma mass spectrometry (ICP-MS)

Introduction

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