

化学

同位素稀释质谱法在丙烯腈-丁二烯-苯乙烯聚合物标准物质汞定值中的应用

逯海1, 2, 马联弟1, 韦超1, 周涛1, 王军1, 赵墨田1, 李金英2, 3

1.中国计量科学研究院, 北京100013 2.中国原子能科学研究院, 北京102413 3.中国核工业集团公司, 北京100822

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摘要 为应对欧盟的RoHS指令, 中日韩三国建立了标准物质联合定值工作机制。文章系统介绍第一次联合定值合作中应用同位素稀释质谱法

(IDMS)为日本丙烯腈-丁二烯-苯乙烯聚合物 (ABS) 塑料标准物质中汞定值的方法。首先利用MC-ICP-MS准确测量了202Hg稀释剂、国家标准物质和ABS塑料中汞的全丰度, 然后采用国家标准物质标定202Hg稀释剂的浓度, 最后利用IDMS测定ABS塑料中汞的浓度。为消除汞的记忆效应, 采用5 μg/g的Au (2%硝酸溶液) 清洗1 min, 而后用5 μg/g的EDTA清洗2 min的程序。实验结果验证了实验室的测量能力, 首次联合定值为下阶段工作奠定了技术基础。

关键词 [同位素稀释质谱法; 丙烯腈-丁二烯-苯乙烯聚合物; 汞; 记忆效应; 不确定度评定](#)

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Certification of Mercury in Acrylonitrile Butadiene Styrene by Using Isotope Dilution Mass Spectrometry

LU Hai1, 2, MA Lian-di1, WEI Chao1, ZHOU Tao1, WANG Jun1, ZHAO Mo-tian1, LI Jin-ying2, 3

1. National Institute of Metrology, Beijing 100013, China;
2. China Institute of Atomic Energy, Beijing 102413, China;
3. China National Nuclear Corporation, Beijing 100822, China

Abstract Under the framework of a co-certification system for the development of Certified Reference Materials (CRMs) among China, Japan and Korea, the 1st co-certification campaign of mercury in acrylonitrile butadiene styrene (ABS) for Japanese CRMs was taken. In this campaign isotope dilution mass spectrometry (IDMS) was used. First, all abundances of Hg in spike 202Hg, CRM and ABS were analyzed by MC-ICP-MS before the certification. Then the concentrations of 202Hg and Hg in ABS were determined with IDMS by Q-ICP-MS. A new procedure to reduce memory effect was used: first, dilute with 5 μg/g Au solution for 1 min; then, 5 μg/g EDTA solution for 2 min. The results accord to each other very well and this implies that the co-certification system can run swimmingly.

Key words

[isotope dilution mass spectrometry](#) _ [acrylonitrile butadiene styrene](#) _ [Hg](#) _ [memory effect](#) _ [uncertainty evaluation](#)

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