

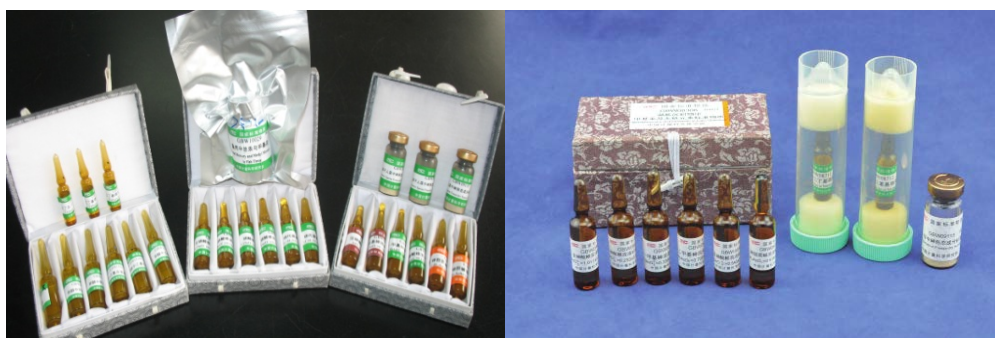
元素形态分析标准物质研究

中国计量科学研究院多年来致力于元素形态分析技术研究和标准物质研发，已建立了甲基汞、乙基汞、亚砷酸根、砷酸根、砷甜菜碱、硒酸根、亚硒酸根、二丁基锡、三丁基锡、硒代蛋氨酸等元素形态的权威测量方法，研制了多个系列元素形态溶液和食品、环境、生物基体元素形态标准物质。参加和组织了 13 项元素形态分析的国际或区域比对，形成了食品和环境基体中典型元素形态核心测量能力，18 项砷、硒和汞形态校准与测量能力（CMCs）获得国际互认，并在国际计量局关键比对数据库（KCDB）公布，确保了我国元素形态分析的量值溯源以及与国际等效一致。

未来将进一步开展皮革和土壤样品中六价铬、保健品中硒形态等环境、食品、生物样品、工业品和消费品中铬、硒、汞、锡元素形态分析标准物质研究。

标准物质研究

标准物质编号	标准物质名称
GBW08675, GBW(E)081524	甲基汞、乙基汞溶液标准物质（甲醇基体）
GBW(E)083364	甲基汞溶液标准物质（低含量，2%甲醇/水）
GBW10029	鱼肉中总汞与甲基汞成分分析标准物质
GBW08308	湖底沉积物中甲基汞及无机元素标准物质
GBW08666 - GBW08671	砷元素形态分析溶液标准物质（系列）包括亚砷酸根、砷酸根、一甲基砷、二甲基砷、砷甜菜碱和砷胆碱
GBW(E)082204	砷形态混合溶液标准物质
GBW09115	冻干人尿中砷形态成分标准物质
GBW08710 - GBW08712	锡元素形态分析溶液标准物质包括三丁基锡、二丁基锡和三苯基锡
GBW10032 - GBW10034, GBW10087, GBW10088	硒元素形态分析溶液标准物质（系列）包括亚硒酸根、硒酸根、硒代蛋氨酸、硒代胱氨酸和甲基-硒代半胱氨酸
GBW10068	牡蛎中无机元素及有机锡形态标准物质
GBW(E)080971, GBW(E)080972	水中三甲基铅成分分析标准物质



Research on Element Speciation Reference Materials

In recent years, National Institute of Metrology (NIM) China has been playing a key role in the improvement of metrology infrastructure at national level in elemental speciation field. Efforts have been made to develop the analytical methodologies in elemental speciation and the relevant certified reference materials (CRMs). At present, analytical speciation methods for methylmercury, arsenite, arsenate, arsenobetaine, selenate, selenite, selenomethionine, tributyltin have been successfully developed in NIM. Meanwhile, various CRMs for elemental speciation including series of aqueous solution standards, food CRMs and complicated biological and environmental matrix CRMs have also been available for the routine analysis. As a coordinate laboratory and the active participant, NIM has organized and attended 13 international and regional key comparisons. Core measurement capabilities for typical elemental species in food and environmental matrices were established and 18 Calibration and Measurement Capabilities (CMCs) for arsenic, selenium and mercury (CMCs) has been published in the Key Comparison Database (KCDB) of CCQM to ensure the traceability of elemental speciation analysis in China and its international equivalence.

In the future, further research will be carried out on the certified reference materials for the speciation analysis of Cr, Se, Hg and Sn in environmental, food, biological samples, industrial and consumer products.

Research on CRMs

CRM No.	CRM Name
GBW08675, GBW(E)081524	Methylmercury and ethylmercury in methanol
GBW(E)083364	Methylmercury in 2% methanol/water
GBW10029	Total mercury and methyl mercury in fish tissue
GBW08308	Methylmercury and elements in lake sediment
GBW08666 - GBW08671	Arsenic speciation standard solutions (series), including arsenite, arsenate, monomethylarsonic acid, dimethylarsenic acid, arsenobetaine and arsenocholine
GBW(E)082204	Mixed solution of arsenic species
GBW09115	Arsenic species in freeze-dry human urine CRM
GBW08710 - GBW08712	Tin speciation standard solutions, including tributyl-, dibutyl-, and triphenyl-tin
GBW10032 - GBW10034, GBW10087, GBW10088	Selenium speciation standard solutions (series), including selenite, selenate, selenomethionine, selenocystine and Methyl selenocysteine
GBW10068	Elements and organotins in oyster tissue
GBW(E)080971, GBW(E)080972	Trimethyllead in water

