Introduction to Inductively-Coupled Plasma Mass-Spectrometry with a Focus on Metal Nanoparticles in Biological Systems

(1) Al-Hakkani, M. F. Guideline of Inductively Coupled Plasma Mass Spectrometry ``icp-MS'': Fundamentals, Practices, Determination of the Limits, Quality Control, And Method Validation Parameters. *SN Applied Sciences* **2019**, *1* (7). https://doi.org/10.1007/s42452-019-0825-5

(2) Ben-Jeddou, K. ; Bakir, M. ; Jimenez, M. S. ; Gomez, M. T. ; Abad-Alvaro, I. ; Laborda, F. Nanosilver-Based Materials as Feed Additives: Evaluation of Their Transformations Along in Vitro Gastrointestinal Digestion in Pigs and Chickens by Using an ICP-MS Based Analytical Platform. *Analytical and Bioanalytical Chemistry* **2024**, *416* (16, SI), 3821–3833. https://doi.org/10.1007/s00216-024-05323-8

(3) Bolea, E. ; Jimenez, M. S. ; Perez-Arantegui, J. ; Vidal, J. C. ; Bakir, M. ; Ben-Jeddou, K. ; Gimenez-Ingalaturre, A. C. ; Ojeda, D. ; Trujillo, C. ; Laborda, F. Analytical Applications of Single Particle Inductively Coupled Plasma Mass Spectrometry: A Comprehensive and Critical Review. *Analytical Methods* **2021**, *13* (25), 2742–2795. https://doi.org/10.1039/d1ay00761k

(4) Douglas, D. ; Houk, R. Inductively-Coupled Plasma Mass-Spectrometry (ICP-MS). *Progress In Analytical Atomic Spectroscopy* **1985**, *8* (1), 1–18

(5) Fernandez-Trujillo, S. ; Jimenez-Moreno, M. ; Rodriguez-Farinas, N. ; Martin-Doimeadios, R. C. R. Critical Evaluation of the Potential of ICP-MS-Based Systems in Toxicological Studies of Metallic Nanoparticles. *Analytical and Bioanalytical Chemistry* **2024**, *416* (11, SI), 2657–2676. https://doi.org/10.1007/s00216-024-05181-4

(6) Houk, R. ; Fassel, V. ; Flesch, G. ; Svec, H. ; Gray, A. ; Taylor, C. Inductively Coupled Argon Plasma as an Ion-Source for Mass-Spectrometric Determination of Trace-Elements. *Analytical Chemistry* **1980**, *52* (14), 2283–2289. https://doi.org/10.1021/ac50064a012

(7) Keller, A. A. ; Huang, Y. ; Nelson, J. Detection of Nanoparticles in Edible Plant Tissues Exposed to Nano-Copper Using Single-Particle ICP-MS. *Journal Of Nanoparticle Research* **2018**, *20* (4). https://doi.org/10.1007/s11051-018-4192-8

(8) Laycock, A. ; Clark, N. J. ; Clough, R. ; Smith, R. ; Handy, R. D. Determination of Metallic Nanoparticles in Biological Samples by Single Particle ICP-MS: A Systematic Review from Sample Collection to Analysis. *Environmental Science-nano* **2022**, *9* (2), 420–453. https://doi.org/10.1039/d1en00680k

(9) Montano, M. D. ; Olesik, J. W. ; Barber, A. G. ; Challis, K. ; Ranville, J. F. Single Particle ICP-MS: Advances toward Routine Analysis of Nanomaterials. *Analytical and Bioanalytical Chemistry* **2016**, *408* (19), 5053–5074. https://doi.org/10.1007/s00216-016-9676-8

(10) Mozhayeva, D. ; Engelhard, C. A Critical Review of Single Particle Inductively Coupled Plasma Mass Spectrometry - a Step Towards an Ideal Method for Nanomaterial Characterization. *Journal Of Analytical Atomic Spectrometry* **2020**, *35* (9), 1740–1783. https://doi.org/10.1039/c9ja00206e

(11) Naasz, S. ; Weigel, S. ; Borovinskaya, O. ; Serva, A. ; Cascio, C. ; Undas, A. K. ; Simeone, F. C. ; Marvin, H. J. P. ; Peters, R. J. B. Multi-Element Analysis of Single Nanoparticles by ICP-MS Using Quadrupole and Time-of-Flight Technologies. *Journal Of Analytical Atomic Spectrometry* **2018**, *33* (5), 835–845. https://doi.org/10.1039/c7ja00399d

(12) Samoylov, A. M. ; Samoylova, T. I. ; Pustovyy, O. M. ; Samoylov, A. A. ; Toivio-Kinnucan, M. A. ; Morrison, N. E. ; Globa, L. P. ; Gale, W. F. ; Vodyanoy, V. Novel Metal Clusters Isolated from

Blood Are Lethal to Cancer Cells. *Cells Tissues Organs* **2005**, *179* (3), 115–124. https://doi.org/10.1159/000085003

(13) Selby, M. ; Hieftje, G. Inductively Coupled Plasma-Mass Spectrometry - a Status-Report. *American Laboratory* **1987**, *19* (8), 16–&

(14) Vodyanoy, V. The Role of Endogenous Metal Nanoparticles in Biological Systems. *Biomolecules* **2021**, *11* (11). https://doi.org/10.3390/biom11111574

(15) Wang, Y. L. ; Lee, Y.-H. ; Chou, C. L. ; Chang, Y.-S. ; Liu, W.-C. ; Chiu, H. W. Oxidative Stress and Potential Effects of Metal Nanoparticles: A Review of Biocompatibility and Toxicity Concerns. *Environmental Pollution* **2024**, *346*. https://doi.org/10.1016/j.envpol.2024.123617