

SP-ICP-MS Characterization of Silver Nanoparticles in Aqueous Media Used for Cultivating Garden Cress Plants (*Lepidium sativum* L.)

Magdalena Muszyńska,^{a,b} Wojciech Hyk^{b*}

^aPro-Environment Polska Sp. z o.o., 101 Żwirki i Wigury Str., 02-089 Warszawa

^bFaculty of Chemistry, University of Warsaw, 1 Pasteura Str., 02-093 Warszawa

*wojhyk@chem.uw.edu.pl

The studies on nanoparticles transformation in the environment and their uptake by plants require the determination of a number of physicochemical parameters that characterize nanoparticles. These include: size, metal concentration in ionic and NPs form, dissolution and agglomeration efficiency. Each of these parameters, until recently, would have required the employment of a separate measurement technique, often with an extended stage of sample preparation. This confirms the attractiveness of the SP-ICP-MS technique as a tool for the potential high-throughput characterization of nanoparticles in various tested systems.

We used garden cress plants (*Lepidium sativum* L.) – popular model plant – to examine the uptake efficiency of silver nanoparticles (AgNPs) of various concentrations. The studies revealed the decrease of the most frequent Ag NPs size over time. Also, ionic silver concentration was lowering to constant value in 4th day of the experiment, regardless of initial concentration level.

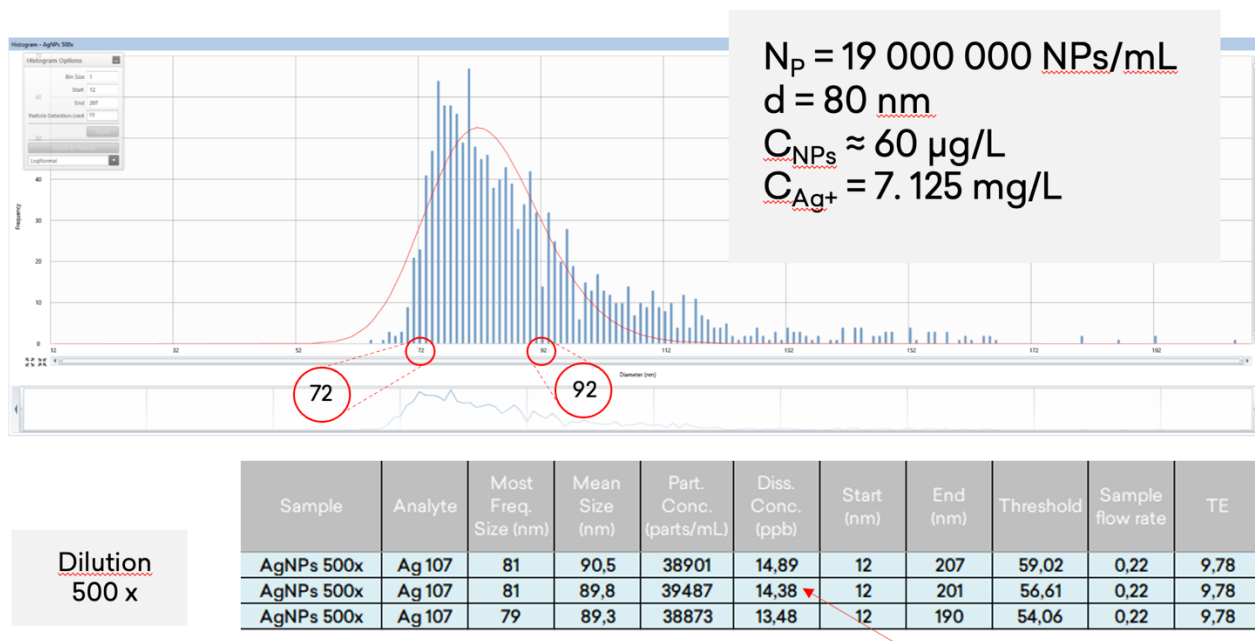


Figure 1. SP-ICP-MS silver nanoparticles characteristics used in the study.