

Synchrotron X-Ray Based Investigation of As and Fe Bonding Environment in Collard Green Tissue Samples at Different Growth Stages

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Abstract : The arsenic and iron environments in different growth stages have been studied with EXAFS and XANES using Brookhaven Synchrotron Light Source. Collard Greens plants were grown and tissue samples were harvested. The project studied the EXAFS and XANES of tissue samples using As and Fe K-edges. The Fe absorption and the Fourier transform bond length information were used as a control comparison. The Fourier transform of the XAFS data revealed the coexistence of As (III) and As (V) in the As bonding environment inside the studied plant tissue samples, although the soil only had As (III). The data suggests that Collard Greens has a novel pathway to handle arsenic absorption in soil.

Keywords : EXAFS, fourier transform, metalloproteins, XANES

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