Scientific Achievement
Scientists revealed how a manufactured nanomaterial (MNM) based on Ce travels through a tomato plant on a subcellular level.

Significance and Impact
This study will enhance our ability to predict how properties of MNM such as CeO$_2$ – used in rechargeable batteries – influence the uptake, transformation, and transfer of nanomaterials in terrestrial food webs.

Research Details
- Mechanisms of functionalized CeO$_2$ entry into tomato roots and translocation within the plants were examined using X-ray nano- and microprobes at NSLS-II HXN and SRX beamlines and APS beamline 13-ID-E
- Plant growth and Ce concentration in tissues were found to be functions of surface charge and translocation, which were greater for negatively charged CeO$_2$ than positive or neutral CeO$_2$.


Work was performed in part at Brookhaven National Laboratory.