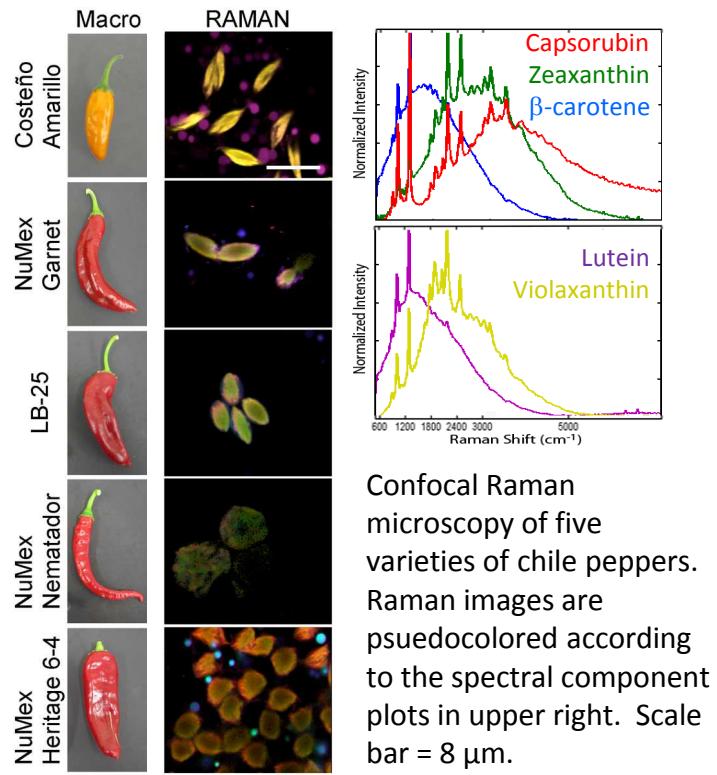


# What Color are Your Chile Peppers?

## Distinguishing Carotenoids in Living Organisms and Tissue

SAND2013-8083P



Kilcrease J, Collins A, Richins, R, Timlin J, O'Connell M. "Multiple microscopic approaches demonstrate linkage between chromoplast architecture and carotenoid composition in diverse *capsicum annuum* fruit" *The Plant Journal*, 2013, in press

Raman microscopy and spectral image analysis was performed at Sandia National Laboratories as part of PARC.

## Scientific Achievement

Subcellular discrimination and relative quantification of multiple carotenoid pigments in vivo

## Significance and Impact

This work and the associated enabling Raman microscopy technology provides a significant increase in the fundamental understanding of carotenoid biosynthesis. Carotenoids are intertwined in a variety of biological pathways, thus this work broadly impacts diverse field such as

- Dietary health and nutrition
- Biofuels and bioenergy

## Research Details

- Hyperspectral confocal Raman microscopy provides chemical resolution of 5 carotenoids in intact, mature chile pepper tissue
- Differential localization of carotenoids to chromoplast and lipid bodies is species specific and correlated with chromoplast structure
- Pigment results confirmed by HPLC and ultrastructure examined by TEM and SEM.