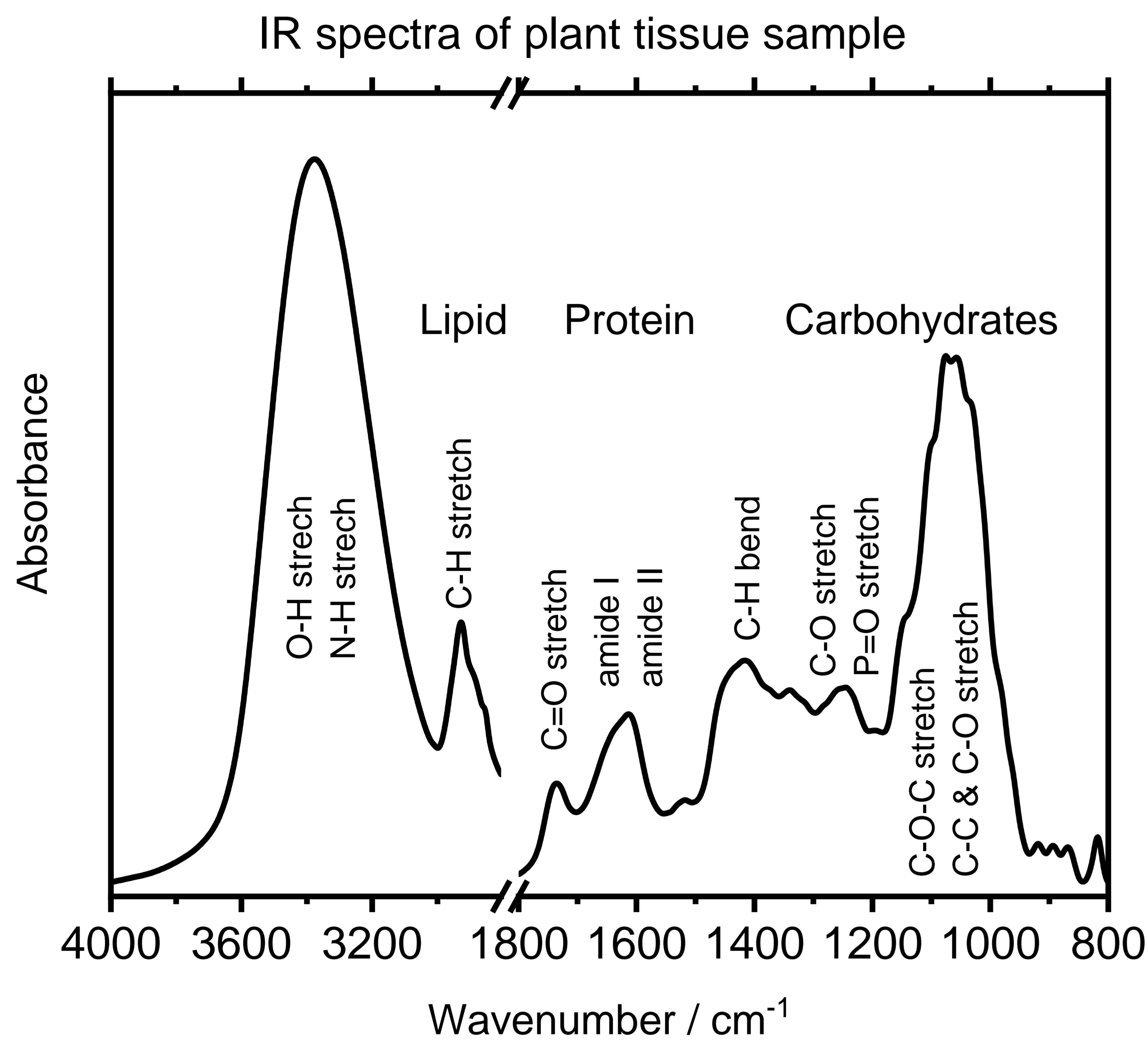


Opportunities for Agriculture Research at the Mid-IR Beamline

Kaiyang TU, Jarvis A. STOBBS, Miranda LAVIER, Scott ROSENDALH, Stuart READ, Chithra KARUNAKARAN

IR spectroscopy for plants

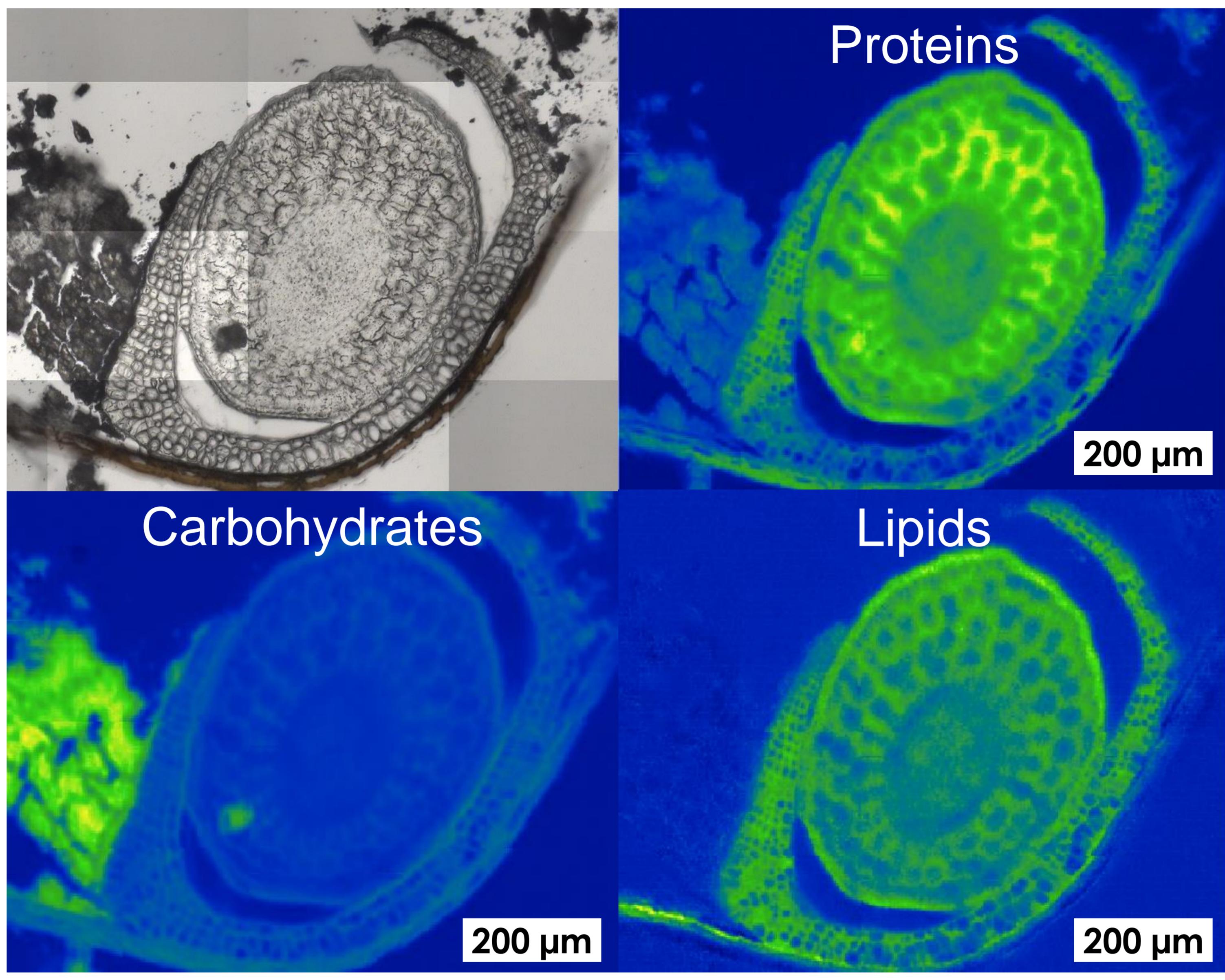
Infrared (IR) techniques is sensitive to a multitude of biomolecules within plant tissues



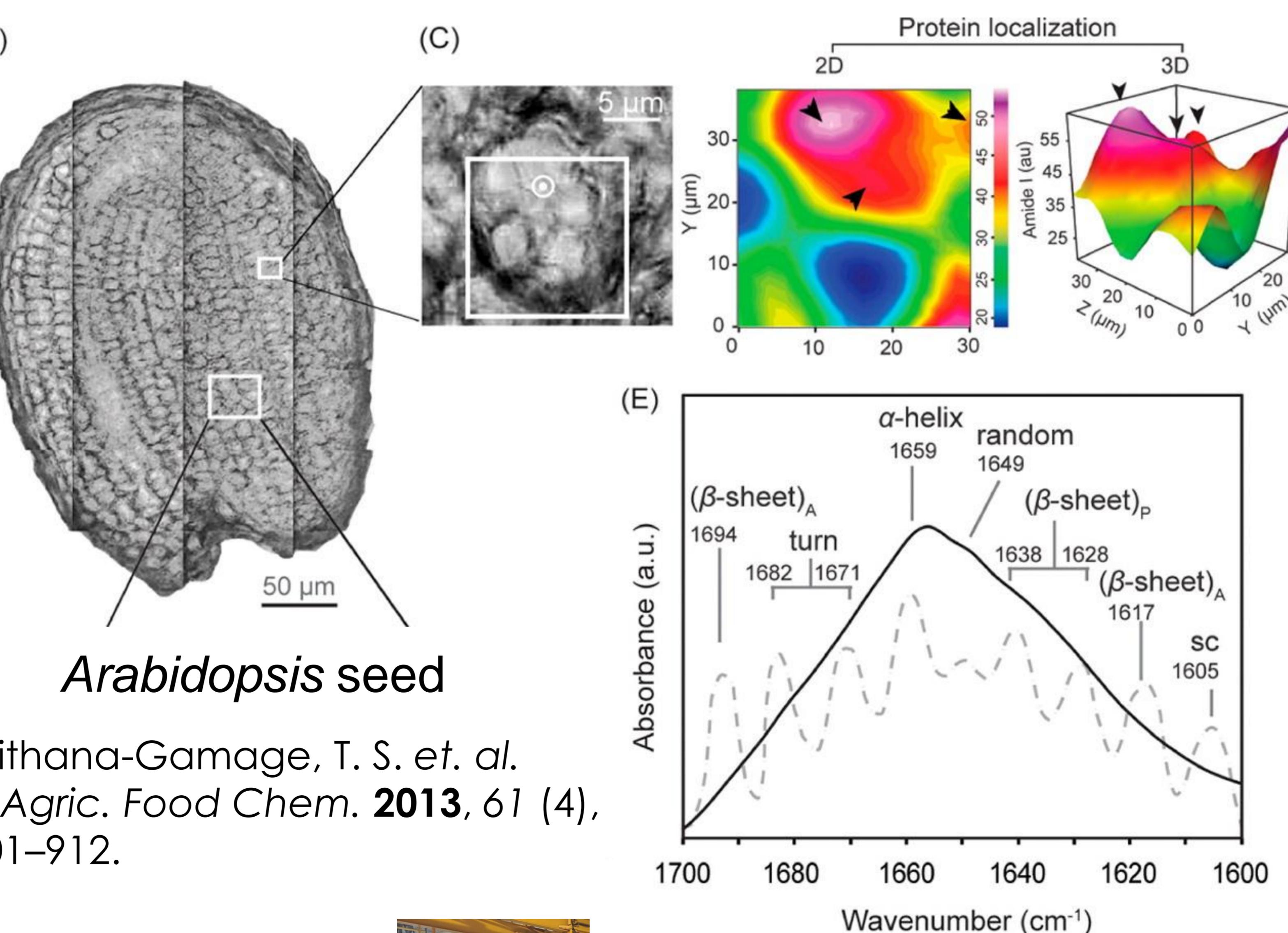
- Quantitative and qualitative composition information (e.g. lipids, proteins, carbohydrates...)
- Simultaneous acquisition for multiple chemical components

Mid-IR Imaging

- Qualitative distribution maps



- Subcellular composition of protein quality determination in a seed

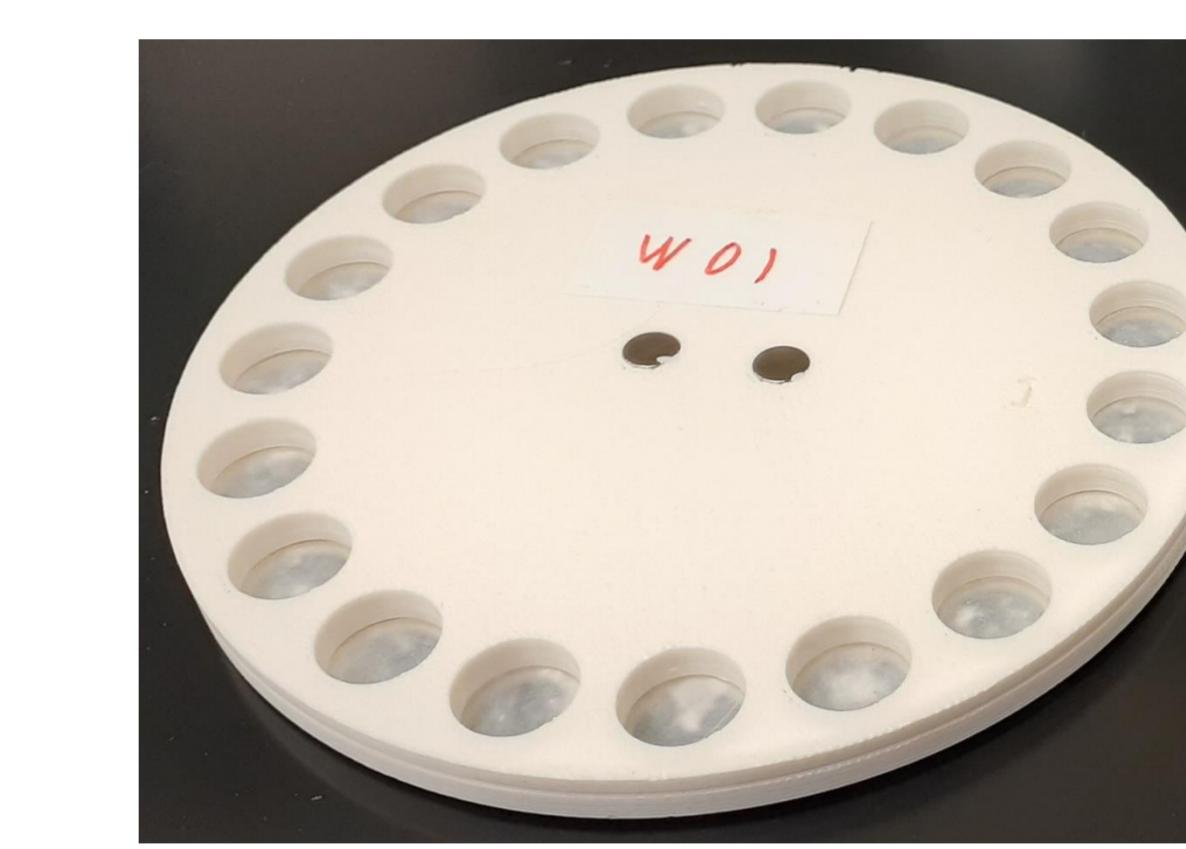


Bulk IR Spectroscopy

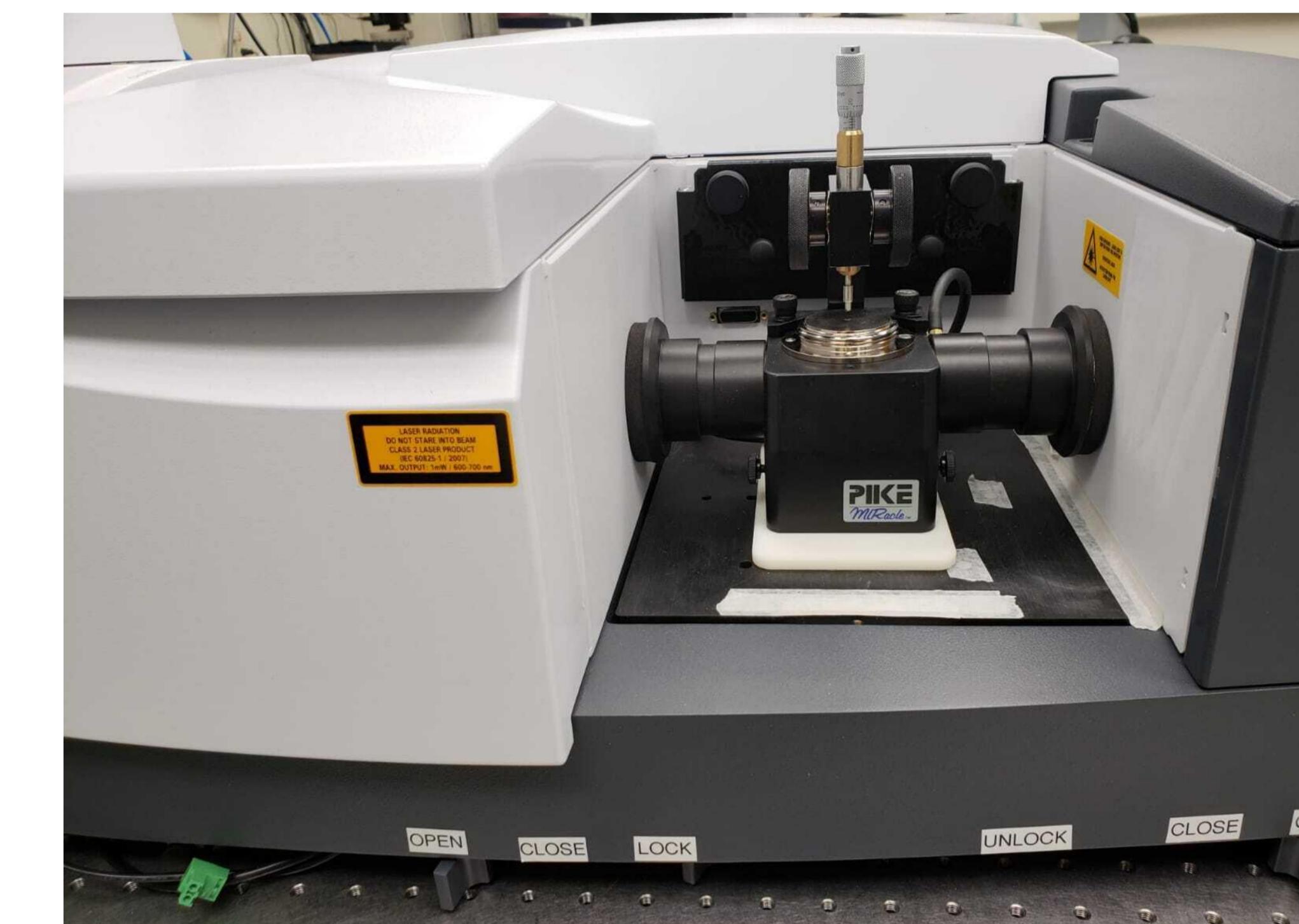
Bulk samples allow for high throughput analysis of plant tissue



KBr
pellets

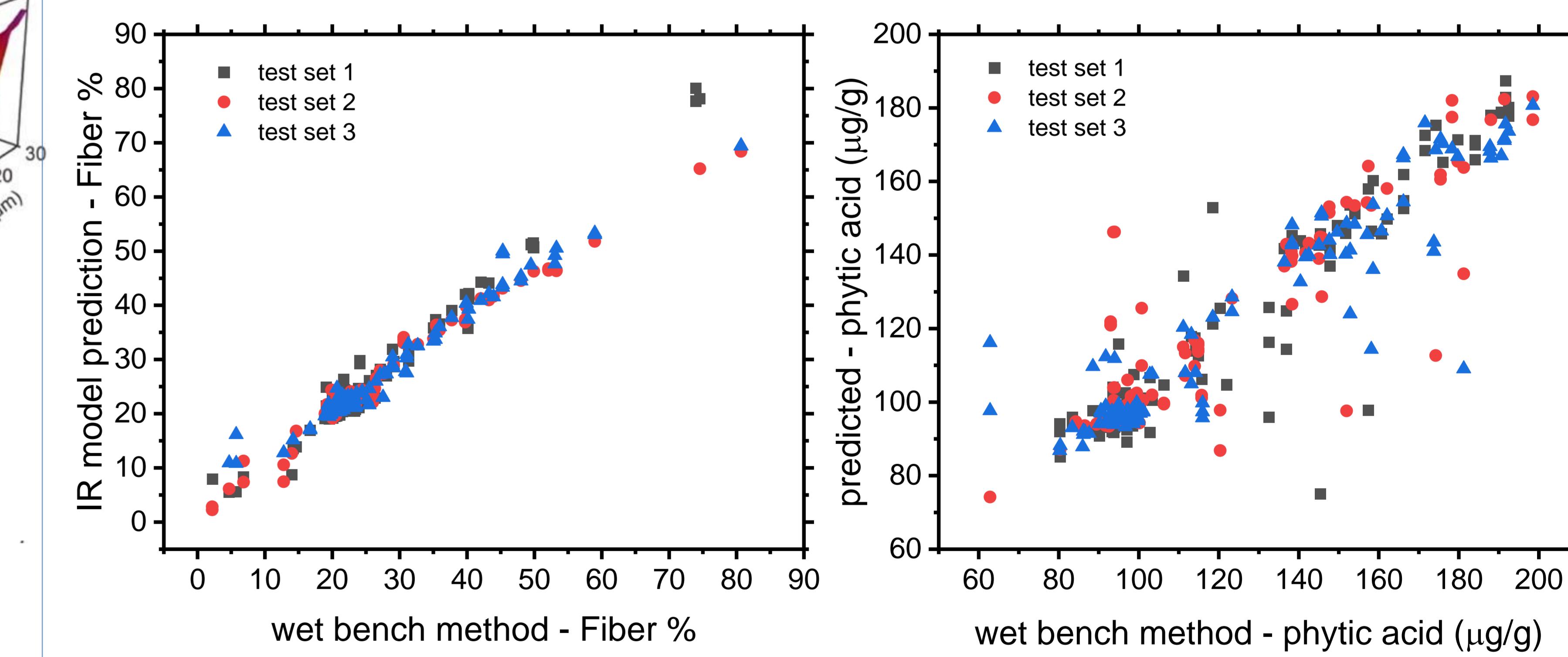


Sample wheel for batch measurement of 18 pellets



IR spectrometer with ATR setup

- Evaluate compositional changes within large sample sets
- Quantitative information on chemical composition either using references spectra or prediction models



Correlation plot of prediction model for pea seeds

Karunakaran, C. et. al. Food Chem. 2019, 309, 125585.



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