

# Multi-wavelength Raman mapping of unicellular algae

**We mapped live *Chlamydomonas* cells with spontaneous Raman at 473, 532, and 785 nm. We share the analysis notebook here.**

Published May 20, 2026

 Arcadia Science

DOI: 10.57844/arcadia-qcgh-g28u

## Purpose

We mapped live cells of *Chlamydomonas reinhardtii* and *Chlamydomonas smithii* at three excitation wavelengths (473, 532, and 785 nm) using two commercial confocal spontaneous Raman systems. Here, we share the analysis notebook used to load, mask, baseline-correct, and decompose the resulting spectral maps. All three datasets captured carotenoid signal, with the 473 nm dataset resolving the most peaks overall and giving the clearest spatial information, due to resonance enhancement, scattering efficiency, and optimized focus. PCA on both unmasked and masked data recovered localized structures consistent with the chloroplast and the eyespot, while NMF possibly picked up the chloroplast as well.

## View the notebook

The **full pub** is available [here](#).

The **source code** to generate it is available in [this GitHub repo](#) (DOI: [10.5281/zenodo.20318526](https://doi.org/10.5281/zenodo.20318526)).

In the future, we hope to host notebook pubs directly on our publishing platform. Until that's possible, we'll create stubs like this with key metadata like the DOI, author roles, citation information, and an external link to the pub itself.

## **Contributors (A-Z)**

- **Tara Essock-Burns:** Resources
- **David G. Mets:** Editing, Supervision
- **Sunanda Sharma:** Conceptualization, Formal analysis, Investigation, Methodology, Project administration, Software, Visualization, Writing