

Short Title: Particle Micro-CT scan

Title: Carbonate particle characterization using micro-CT scans

Project leads and contact details:

Dr. Zane Jobe zanejobe@mines.edu

David Nworie dcnworie@mines.edu

Suggested team size: 2-4

Logistics: Can work from anywhere, *with periodic meetings in Berthoud 143 (with free lunch)*

Project description:

Understanding the size and shape of ‘grains’, or sediment particles are key factors for interpreting earth-surface processes and resources –think about using the size of boulders in Clear Creek to understand recent and ancient flood history. This project focuses on understanding how the unique grain shape of carbonate particles (e.g., shell fragments) affects their transport via oceanic currents. You will process and analyze 3D micro-CT scan data of sediment samples from natural carbonate sediment to help characterize their grain size and shape using Python or Matlab. You will use several image-processing packages to process and analyze .tiff stack images, extracting features like grain boundaries/polygons to eventually compute grain parameters like size/volume and shape. There’s an opportunity to remain involved as a paid part-time researcher during the 2025-26 school year.

