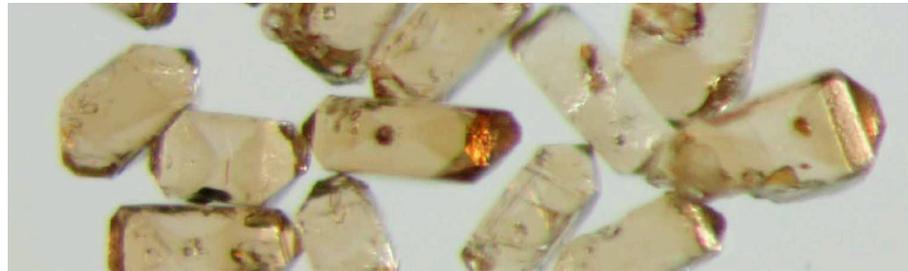


2

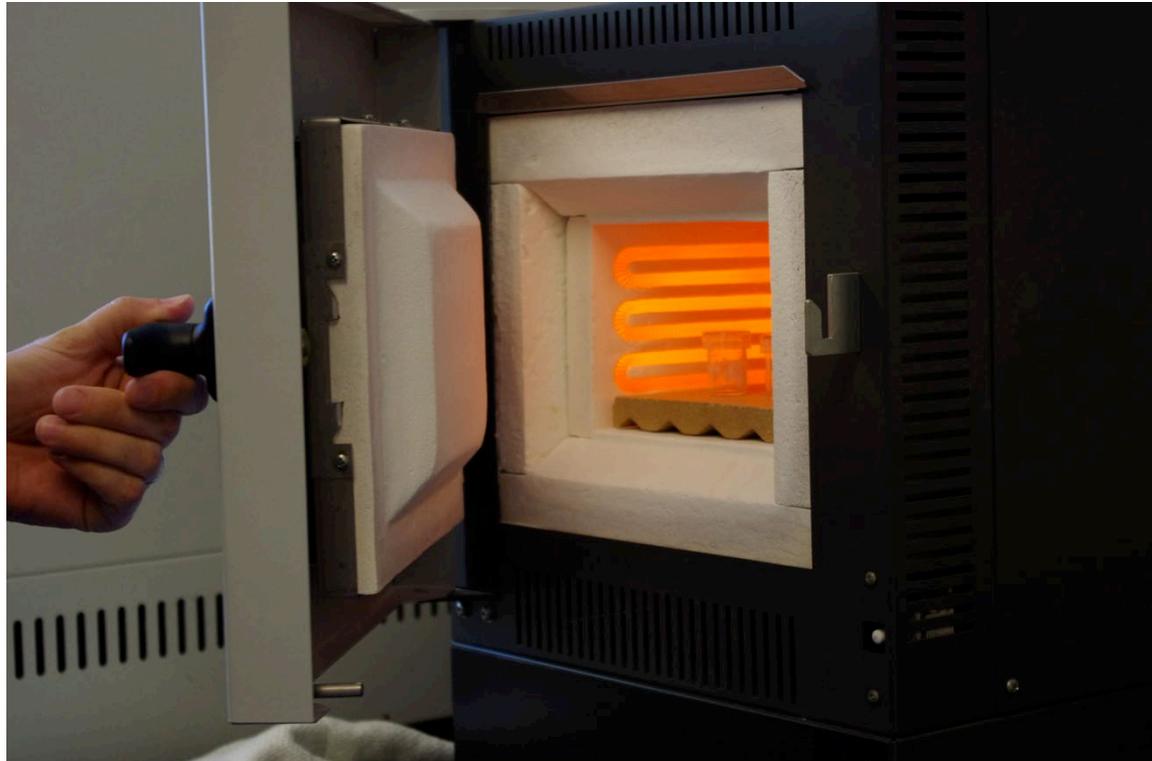
Selecting and Imaging Zircons

After the zircon crystals are separated from the rest of the rock sample, the best grains are selected, polished and imaged to look for different growth domains, and then selected for analysis



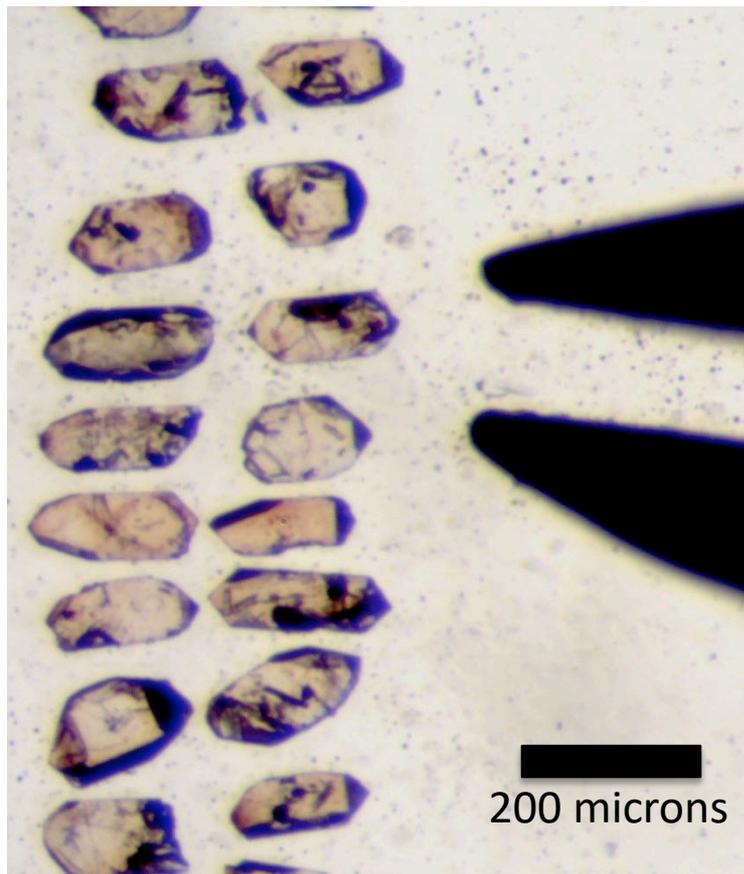
Selecting Individual Zircons

After magnetic and density separation, the remaining zircons are examined under a microscope and sorted for further analysis.



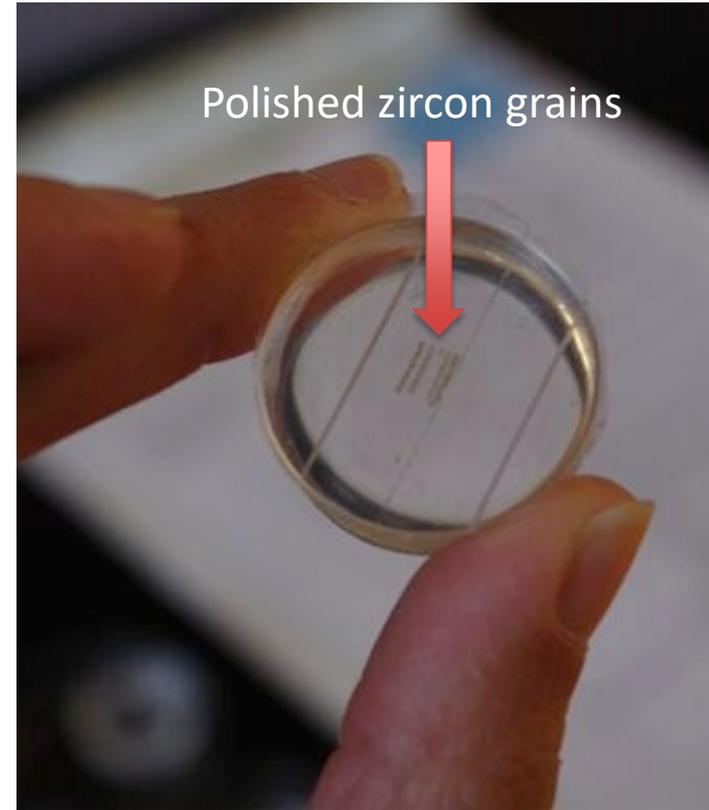
Annealing Zircon Grains

The zircon grains that are selected for analysis are placed in quartz beakers and heated in a furnace at 900 degrees Celsius to “anneal”, or remove defects in the crystal structure.



Making a Grain Mount: Selection and Placement

The annealed zircon grains are sorted by quality, size and shape under a microscope, and then lined up on double-sided tape with fine tweezers.



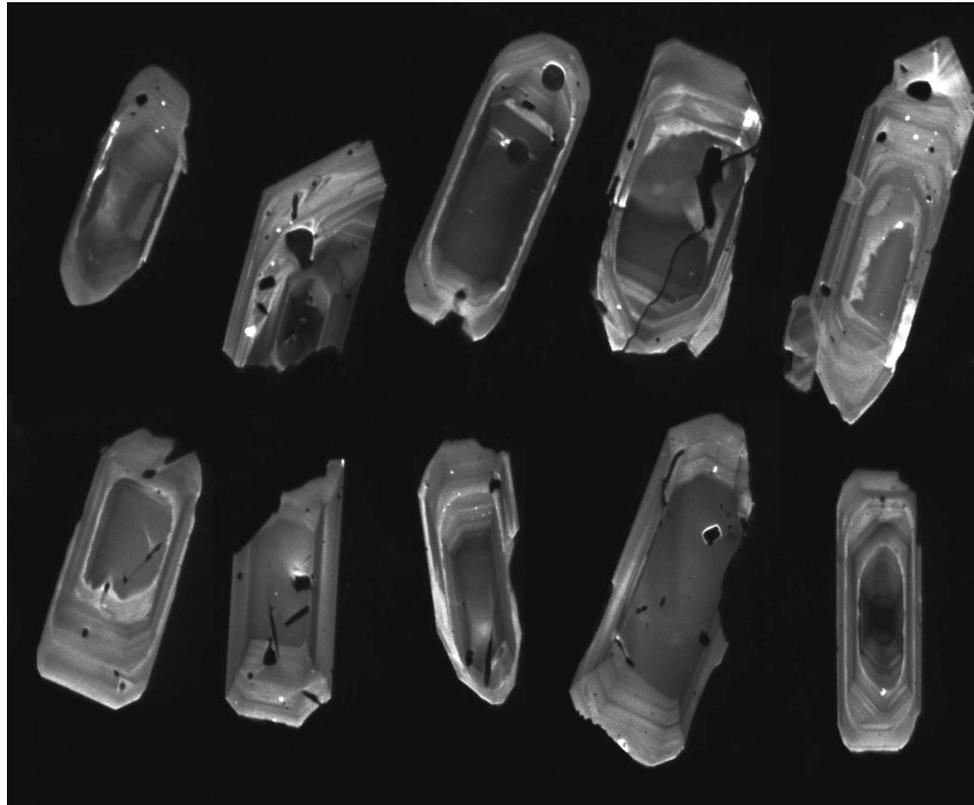
Making a Grain Mount: Grinding and Polishing

The zircon grains are then surrounded by a mold and covered with liquid epoxy resin that cures into a hard plastic puck-shaped “grain mount”. The grains embedded in this grain mount are then carefully ground down to their centers with lapping film, and polished with aluminum oxide so that the crystal interiors can be examined with a scanning electron microscope.



Imaging Zircons with Cathodoluminescence

When the zircon crystals are bombarded with an electron beam in a scanning electron microscope, the crystals give off light, or “cathodoluminescence”. The light emitted creates a map of the interior zoning of the crystal which is otherwise invisible to the naked eye. Analogous to the growth rings of a tree, this image reveals the internal stratigraphy, or relative age, of different parts of each zircon crystal.



Cathodoluminescence Images

This cathodoluminescence image shows the internal stratigraphy, or relative age, of different parts of each zircon crystal.