

VOLCANIC ROCKS

Required:

- Selection of volcanic rocks
- Rock signs (provided)
- Volcanoes slideshow printout (provided)
- One or two petrographic microscopes
- One basalt (and one gabbro) thin section
- Blue tack

Optional:

- Volcanic ash

Ages: 5 plus, but excellent for teens and adults.

Warning! Supervise rock and microscope handling at all times. And if you have ash, people WILL taste it!



Set-up

Choose six or seven volcanic rocks that will interest people. The best collection includes pahoehoe lava, a'a lava, obsidian, pumice, andesite or dacite, gabbro or granite. Volcanic ash (especially touchable ash) is also really popular! Put a print-out of the Volcanoes Slideshow where you can get to it – you'll point to it a lot during the day.

Two microscopes are ideal, one for basalt ("lava") and one for gabbro or granite ("stalled lava"). Use the blue tack to fix the slides in place. Make sure the focus is fixed, and the analyzer is in (crossed polar views are much more spectacular!).



What to do

Ask people if they want to look at some lava, and show them the different textures and colours of your rocks. Use the Volcanoes Slideshow print-out to show them what kind of volcano produces each kind of rock. Get them to pick up the pumice and say that it can be thrown hundreds of metres high in an explosive eruption.

If you have volcanic ash, offer people the chance to touch it. You can talk about how large grains of ash fall out close to the volcano, but fine grains travel far – so many samples collected on the ground are quite uniform in size.

Finally, ask what people think lava looks like under a microscope. Tell them that the basalt rock is under this microscope – when they look, they see the bright colours of crossed polar views (this usually gets a great “wow” response). You can then talk about crystals being small because lava rose through the crust quite quickly and crystals didn’t have much time to grow; in contrast, the crystals in gabbro (or granite) are much bigger because it’s lava that never made it to the surface. You can then say that there are no crystals in obsidian because it moved through the crust even faster than the basalt.

Tips

- Basalt often comes from hotspot and mid-ocean ridge volcanoes, but it can erupt at subduction zone volcanoes too. The Volcanoes Slideshow has mid-ocean ridge photos from Afar (Ethiopia – a mid-ocean ridge that’s advanced onto land) and hotspot photos from Hawaii.
- Andesite and dacite come from subduction zone volcanoes. Several are pictured in the Volcanoes Slideshow. They also erupt pumice.
- The difference between pahoehoe (pronounced pa-ho-ee-ho-ee) and a’a (pronounced ah-ah) lava is the gas content. The difference between dacite lava and pumice is also gas content. Pumice is basically foamy lava – the dacite is so viscous that gas can’t escape.
- A’a (like pahoehoe) is probably a Hawaiian word. But some say this lava was named a’a because that’s the sound you make if you try to walk over it – it’s very sharp!
- Get people to handle one rock and they start looking at the others. Pick one to use as a “draw”.
- If you have space, get a jar of water and try floating the pumice. But don’t have water close to the electrical microscopes.
- More information about volcanoes is included in the Disaster Zone poster, Deadly Quiz, and the Volcanoes Slideshow if you need to brush up!