

### LAB 3: IGNEOUS ROCKS IN THE FIELD

Leave Conway and head east towards Little Rock on Interstate 40. Once you pass the Morganton/Maumelle exit, get ready to bear right on Interstate 430. Head southwards on Interstate 430 and cross the Arkansas River.

**DON'T STOP, BUT SLOW DOWN IF YOU CAN:** Look at the rocks exposed in the roadcuts along Interstate 430, just south of the river, more or less between the river and the Cantrell Avenue / Hwy 10 exit. There aren't really any good places to pull over, so don't stop, but try to slow down if you can do it safely.

1) These rocks are sedimentary rocks, and you should be able to see *bedding*. However, there is evidence that these rocks have been disturbed—by a collision between two continents. What evidence for this collision can you see? Describe it as well as you can.

**STOP 1:** Continue south on Interstate 430. Take Exit 4 for Col. Glenn Road. Turn left on Col. Glenn Road, pass under the interstate, and take the first right into the Colonel Glenn Plaza shopping center. Park at the Wendy's restaurant (10924 Col. Glenn Road). From there, walk down to Col. Glenn Road and then up the northbound onramp towards Interstate 430. The rocks we want to examine are exposed along this onramp. Please watch for traffic and be careful!

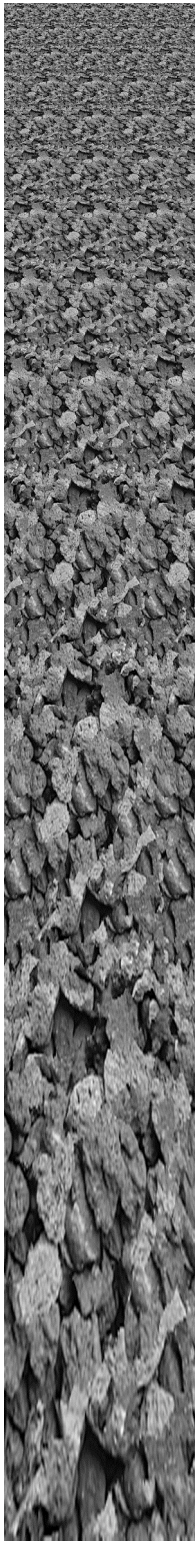
2) Examine samples of the rock exposed at the south end of this roadcut. What type of rock is it? Describe it as best you can.

3) Your instructor will point out veins of a mineral. Test the veins with the tests provided, and record the results. What is the mineral? (It's quite a common one, so this should be easy.)

4) How did the veins get there? (Check your lecture notes and the on-line slide handouts; the answer is in there.) Which formed first: the veins, or the surrounding rock? What do the veins tell you about the past geologic history of this place?

5) Your instructor will then point out a structure known as a *dike*. Test the mineral that the dike is made of, and record the results. What mineral is the dike made of? Has it always been made of this mineral?

6) Look at the rock that directly surrounds the dike. Compare it to the rocks that you examined at the south end of the roadcut (see question 2). How are they different? Describe the differences as best you can. Why might they be different?



1 mm

2 mm

4 mm

5 mm

6 mm

8 mm

10 mm

**STOP 2:** Return to the vehicles. Head back the way you came on Col. Glenn Road and exit onto Interstate 430 northbound (going past the roadcut you just looked at). Then take Exit 6 onto Interstate 630 (there's road construction here, so keep your eyes open and follow the signs). Proceed east on Interstate 630 to its end in the middle of Little Rock, and then get on Interstate 30 westbound. Get in the middle lane. Proceed on Interstate 30 to the last interchange, and take the Interstate 530–US Hwy 67/167 exit towards Pine Bluff. Proceed southwards on Interstate 530–US Hwy 67/167 and take the Dixon Road exit (exit 3). Go down the off-ramp, cross Dixon Road and park in the parking lot. Walk back across Dixon Road (carefully!) and up the ramp that you just came down. (The nearest landmark is a Shell gas station at 111 W. Dixon Road—if you have a smartphone with Google Maps or some such, you could input that address.)

7) There is a large body of igneous rock here. (Technically, it's called *nepheline syenite*; it's a type you haven't seen.) Examine it. Is it extrusive or intrusive? Is it mafic or felsic?

8) Use the attached chart to try and estimate the size of the grains in the rock at the base of the roadcut. Record your answer.

9) Use the chart to estimate grain size at three more locations as you walk up the roadcut. Record your answers. Can you detect any trend? What does that tell you about how this body of rock formed?

10) Just around the corner, there is a sizable commercial quarry that extracts this rock. Go on-line and find out what it's used for. HINT: One of this rock's uses is for something called *riprap*. What is riprap?

Take notes during this trip. Write up your answers to these questions—they should not require more than a sentence or two each—and turn them in next week. Spelling, grammar, etc. all count.

