Naming Igneous Rocks

C:\Courses\320\in-class\02-NamingIgRocks.wpd; August 23, 2003 (11:20am)

The samples used in the exercise come from two Wards Collections: Classic North American Rocks. and University Rock Collection.

We have provided you with 12 samples of igneous rocks. You have both hand specimens and thin sections. Below are descriptions of those rocks that came from the literature and from DP. You should write a report:

1. For each of the major minerals, describe the properties (both in hand specimen and thin section) that let you identify them.
2. Estimate the relative abundances of the major minerals.
3. Name the rock using the charts and methods described on pages 18-22 in the book.

sample #	description and major minerals
1	A gray, medium gray rock containing: -anhedral quartz -anhedral K-feldspar (twinned orthoclase mostly changed to microcline) -subhedral to euhedral Na-rich plagioclase (often zoned) -biotite, partially chloritized or altered to muscovite
4	A coarse grained rock with large pink subhedral K-feldspar (microcline) crystals giving a somewhat porphyritic character. It contains: -microcline -smaller plagioclase (oligoclase) crystals are zoned, subhedral to euhedral -some feldspars are perthitic or contain inclusions. -anhedral quartz is also present. -biotite and minor green hornblende too.
7	A medium granular, gray rock, containing: -euhedral to subhedral plagioclase, zoned and in places sericitized -pink K feldspar (microcline perthite) -subhedral biotite and hornblende, often clustered -quartz
12	A gray, porphyritic rock, locally vesicular, with: -phenocrysts of smoky quartz up to 5mm wide -subhedral to euhedral phenocrysts of glassy K-feldspar (sanidine, some of which shows Carlsbad twins) averaging about 4mm in length -plagioclase (oligoclase) -minor biotite -tiny garnet and topaz crustal appear in some vesicles

13	A granular gray rock composed of: -sodic plagioclase that is slightly sericitized -K feldspar (orthoclase) -minor quartz -considerable hornblende and biotite are present
18	A dark gray medium grained porphyritic rock containing: -abundant acmite phenocrysts, sometimes zoned or twinned -lesser amounts of biotite phenocrysts -rare olivine (anhedral) -low birefringence sanidine has a tabular form and shows cleavage -low birefringence/anomalous nepheline (sometimes with a hexagonal outline, generally not showing cleavage)
21	A light gray, earthy looking rock containing: -phenocrysts of anorthoclase tablets, some showing a “Moire-type” extinction -trachytic textured matrix is mostly thin orthoclase crystals, stubby nepheline (anhedral), and aegirine microlites
25	A dark gray medium grained rock containing: -black to green hornblende, partially replaced by biotite -anhedral, slightly zoned, glassy plagioclase
26	A gray porphyritic rocks containing: -phenocrysts of gray plagioclase, generally zoned -small to medium dark hornblende crystals -a few subrounded, scattered, partially resorbed sanidine grains -microphenocrysts of biotite -a matrix that is mostly a quartz-feldspar mix
29	A brownish black granular rock containing: -subhedral hypersthene, often containing inclusions -plagioclase, Ca-rich and generally twinned -garnet -magnetite
33	A medium grained dark gray rock containing: -plagioclase (labradorite, subhedral to euhedral laths) -augite (anhedral, sometimes twinned or exsolved) -conspicuous magnetite and ilmenite
37	A black, fine grained, porphyritic rock with: -phenocrysts of augite -phenocrysts of olivine -laths of calcic plagioclase -the matrix contains augite, olivine, plagioclase, magnetite, biotite and apatite