

May 2018 Atlanta Geological Society Professional Geologist Candidate Workshop

Date: May 19, 2018

Time: 10:00 am to 12:00 pm

Venue: Fernbank Science Center (check with the receptionist for the specific classroom)
156 Heaton Park Drive,
N.E. Atlanta, GA 30307
678-874-7102
<http://fsc.fernbank.edu/>
[Map](#) to Fernbank

Speaker: Steven J. Stokowski, PG

Subject: Petrography and Petrology for ASBOG Exam Candidates

Steve is a consulting Materials Geologist in Lawrenceville, GA. Steve was previously the Principal Petrographer of TEC Services, President of Stone Products Consultants, the Aggregate Technologist/Petrographic Laboratory Expert at the Turner-Fairbank Highway Research Center (FHWA), and with Vulcan Materials, Martin Marietta Laboratories, and Genstar Stone Products. He has a MS in Geology from the South Dakota School of Mines and Technology. Steve is the past Chairman of several professional organizations: AEG-BWH, SME-DC, and NESM. He is Registered or Certified as a Geologist in Georgia, Maine, Tennessee, Virginia and other states.

Petrography and Petrology for ASBOG Exam Candidates

This review will cover petrography and petrology relevant to minerals and rocks. Steve will emphasize facts and calculations likely to be presented in the ASBOG Exam. The petrography review will focus upon the microscope tools and microscope methods used by geologists to perform their duties. The primary focus will be on reflected light (RL) and polarized light microscopes (PLM), ubiquitous in classic geology departments, but often optional in departments that emphasize groundwater and environmental geology. You will learn the basic components and operation of the PLM microscope, the types of data, and how the data are used in petrology. Also covered will be the types and applications of scanning electron microscopes (SEM), along with the associated energy dispersive (EDS) and wavelength dispersive (WDS) x-ray analysis methods. Not

emphasized, but mentioned, will be the other types of microscopes and their geologic applications.

After discussing the tools and methods of petrography, we will review mineralogy and then mineral identification with a microscope. The major chemical and crystal classes of minerals will be covered, followed by their diagnostic features and associations. Then, the characteristic features of minerals in thin section will be presented. This will include crystal shapes, pleochroism, birefringence, twinning, and associated and alteration minerals.

The petrology review will cover the classification and origin of igneous, metamorphic, and sedimentary rocks, including coal. I will discuss field and laboratory classifications based upon color, grain size, and mineral content. The IUGS classification schemes for plutonic and volcanic rocks will be described including QAPF diagrams. Bowen's reaction series will be covered as will phase equilibria. For metamorphic rocks, the fabric, composition, and mineral facies schemes and their applications will be presented. Sediments and sedimentary rocks will be subdivided into quartz and silicate-rich sediments and rocks, carbonate sediments and rocks (limestones and dolomites), carbonaceous sediments and rocks (peat, lignite, bituminous coal, etc.), and other, less-common, rock types. The identification of heavy minerals will be presented, as will grain size, roundness, and texture analysis analyses of sediment grains. The relationship of Goldich's dissolution series and Bowen's series will be explained, and how Goldich's observations explain the chemical and mineral composition of sedimentary rocks, especially arenites through lutites. For carbonate rocks, the highlights of the distinctions between limestones and dolomites will be covered, as will carbonate rock classification schemes, especially Folk's particle type and texture classification. For carbonaceous sediments, we will discuss the characteristics of peat through anthracite.

Please join us and **forward this message** to anyone interested in becoming a Georgia Registered Professional Geologist, or anyone who might be interested in the topic. Two Professional Development Hours are available for attendees of the class. The classes are open to all, membership in the AGS is not required, but for \$25/year (\$10 for students), it is quite a bargain! Please consider joining, the AGS is one of the most active geological organizations in the Southeast.

For more information on becoming a member, visit www.atlantageologicalsociety.org.

Contact us at the addresses below if you have questions about the workshop or the exams.

Atlanta Geological Society

Professional Registration Committee

Ken Simonton, P. G., kws876@gmail.com

Ginny Mauldin-Kenney, ginny.mauldin@gmail.com