

Department of Geosciences XRF Use Policy

The portable X-ray fluorescence device (XRF) was purchased by John Singleton and is housed in NR 325, (Jerry Magloughlin/John Singleton) laboratory. The instrument is useful for quantitative chemical analysis of minerals, rocks, and other materials, and semi-quantitative chemical analysis for purposes such as mineral identification. Most major elements (Mg and heavier), and numerous minor and trace elements (but not REEs) may be analyzed. Powder standards relevant to various bulk compositions will be developed and maintained in the laboratory. The instrument is considered to be a potential radiological hazard by CSU and requires special training and hazard awareness for use. Discuss with Jerry or John if you wish to obtain analyses or become a certified operator.

General Guidelines

- o In-house use is generally open to Geosciences faculty or students for research or educational projects as approved by John and/or Jerry. Authorization to use the instrument may be terminated by John and or Jerry for not following established protocols, lab rules, or reasonable standards of laboratory and academic conduct.
- o One-time uses (e.g., analysis of an unknown material) do not require formal approval but must be conducted by Jerry or John or a certified operator.
- o Approval for longer-term research projects will ordinarily be by both Jerry and John. Prospective users will fill out the application form (below). Issues of co-authorship may warrant discussion under certain circumstances.

Approval Process

- o For multiple or extensive uses of the instrument by a user, a use request form will be posted on the department web site; one week or more may be required for approval based on John and Jerry's availability. No uses that unduly endanger the instrument will be approved. For such uses, users will have to complete the CSU EHS Radiation Control Office on-line modules 0 and 8, and request a film badge from the RCO. See: <http://www.ehs.colostate.edu/WRad/Home.aspx>
- o Jerry is the first point of contact on training for approved users.
- o Users may be required to purchase disposables for the lab, standards, analysis of new standards, ancillaries for the instrument, or other useful materials or equipment as appropriate and judged by John and/or Jerry.
- o The instrument may also be borrowed for field work, if available, on a case-by-case basis following proper training.
- o Users who cause physical damage to the instrument may be required to pay for repairs (primarily this refers to field use).
- o Approved users will need to fill out a new application for each distinct project.

Examples of Typical Applications

- 1) A one-time analysis of one or a small number of specimens, e.g., for identification purposes – *conducted by Jerry or John in the lab.*
- 2) Analysis of a suite of a researcher's samples by Jerry or John.
- 3) Analysis of a significant number of samples (powdered, rock, or mineral specimens) by the researcher in-house as part of research or educational project -- *conducted with the general supervision of Jerry or John in the lab; complete and submit request form, and when approved, complete radiation training modules 0 and 8, and obtain film badge.*
- 4) Use of the instrument in the field – *requires the involvement of Jerry, John, or another certified operator.*

Application to use the Department of Geosciences XRF

Please address the following questions:

1. Name, department, position, and full contact information.
2. Name of supervisor or immediate collaborators, if appropriate.
3. Title of proposed project, and general disciplinary context (petrology, economic geology, mineralogy, etc.) of the proposed project.
4. For what purpose would the analyses be used? (e.g., abstract/talk at a meeting, thesis or dissertation, manuscript submitted to a journal, in a grant proposal, etc.)
5. Approximately when would you ideally like to do the analyses?
6. Describe the types and range of materials (rock, sediment, lithology or mineralogical make-up, etc.) you propose to analyze, and note any unusual bulk compositions. Note: researcher is solely responsible for preparing specimens to required conditions. Solid samples ordinarily need to be at least 1 cm³, and for powders, at least a few cubic cm are needed.
7. Approximately how many individual *specimens* do you propose to analyze?
8. Approximately how many individual *analyses* do you propose to obtain?
9. Are there particular elements or sets of elements important for this project? Note: the XRF does not analyze Na or lighter elements, nor REEs. Contact Jerry for information on detection limits.
10. Describe previously obtained (or expected) bulk chemical analyses by other means of specimens relevant to this project (powders from analyzed samples may be retained by the lab as standards).
11. Describe the availability of funding if a materials purchase is required.

Submit your application to Jerry Magloughlin (jerry.magloughlin@colostate.edu) and John Singleton (john.singleton@colostate.edu).