2007 GSA Denver Annual Meeting (28–31 October 2007)

Paper No. 206-57

Presentation Time: 8:00 AM-12:00 PM

WEB-BASED RESOURCES FOR TEACHING PHASE EQUILIBRIA

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A *Teaching Phase Equilibria* writing team met in March 2007 to create a comprehensive curriculum of on-line resources designed to help students (and other novices) understand phase equilibria and use advanced thermodynamic modeling programs with applications in the geosciences. The goal of this project is to provide the essential information and resources required for users to understand, critically evaluate, and appropriately apply and interpret heterogeneous phase equilibria as applied to a variety of geological problems. Although much of the information and resources already existed, we have combined it, added to it, and made it all available in one place.

Members of the writing team developed modules on the following topics: the phase rule; phase diagrams (PT, TX, unary, binary, ternary and pseudosections); chemographic projections; method of Schreinemakers; basics of thermodynamics; Clapeyron equation; experimental petrology; reaction curves; balancing metamorphic reactions with linear algebra; mineral formulae recalculations; activity models; "classical" thermobarometry; PTt paths; and advanced thermodynamic modeling programs such as MELTS, PERPLEX, TWQ, and ThermoCalc.

Modules includes essential background information and theoretical foundation, tutorials, handouts and other curricular materials, worked examples, power point shows, animations, and teaching activities. The worked examples are especially useful to help students understand how to use complex phase equilibria modeling programs.

Web authoring was done via the content management system at the Science Education Resource Center, Carleton College (http://serc.carleton.edu). The scientific and pedagogic content of all webpages was internally reviewed by members of the writing team and a quality assurance review was done to make sure that all webpages conformed to best practices in web design.

The model of convening small working groups to create enduring web-based resources can be applied to other areas of interest to develop coherent and comprehensive instructional resources in the geosciences. It is an extremelye efficient and motivating process that yields high-quality results. The Teaching Phase Equilibria instructional resources can be found at: http://serc.carleton.edu/research_education/equilibria/index.html. This project was funded by NSF grant EAR 03-06708.

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General Information for this Meeting

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Colorado Convention Center: Exhibit Hall E/F
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