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Modelling vs. Reality: contact-metamorphosed to regionally-metamorphosed pelites

DAVID R M PATTISON[1] AND JACOB F FORSHAW[2]

[1]University of Calgary
[2]University of British Columbia

Thermodynamically-calculated phase diagrams are predictions, or “models”. They are not reality. They are based on assumed thermodynamic data (end members and solution models), an assumed reactive bulk composition, an assumed chemical system, and assumed attainment of chemical equilibrium of all elements in all phases at all conditions in the phase diagram. Because the aim of modelling is to provide insight about natural processes, a minimum requirement is that it reproduces repeated patterns of natural mineral assemblages and compositions. This presentation assesses how well the most popular thermodynamic models do for metapelites, based on comparison with a worldwide natural database organized by pressure-sensitive mineral assemblage sequences (365 localities; 3,293 samples; 12,429 mineral analyses). Suggestions for future research are made in the light of these results.