

**Advances in the Past 20 Years: Geochemistry in Geothermal  
Exploration,  
Resource Evaluation and Reservoir Management**

**Christopher W. Klein**

**GeothermEx, Inc., 5221 Central Avenue, Suite 201, Richmond CA, 94804 USA**

***Keywords:***

*Geothermal geochemistry, sampling, analysis, chemical geothermometry, isotope studies, fluid inclusions, trace elements, geochemical reaction modeling, scaling, wellflow chemistry modification, tracers*

**ABSTRACT**

Most theoretical fundamentals of geothermal geochemistry were established by the mid-1980s, as were numerous practical applications of these fundamentals to geothermal resource evaluation and management. Since that time, these geochemical tools have been refined to various degrees. Advances are discussed in the categories of sampling and analysis, exploration and resource evaluation, and resource management. Noted developments include: widespread use of high-performance liquid chromatography (HPLC); advances in spectral analysis; new and refined chemical geothermometers (especially using non-condensable gas species); analysis tools that enable fluid inclusion stratigraphy; ground surface CO<sub>2</sub> flux measurement; integration of geochemical reaction models into numerical reservoir simulation; scaling and wellflow chemistry modification; new reservoir tracers and flow-line tracer enthalpy technology. Emphasis is placed on commercially applied technology, but academic developments are included.

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