

Evolution of condensed matter in the solar system: chemical and isotopic fractionation in chondrules and CAIs

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Recent development in thermodynamics and evaporation experiments enables us to model the chemical evolution of condensed matter in the solar nebula. In particular, chemical and isotopic compositions of chondrules and some types of CAIs were successfully explained with the model. The important progress is in the application of thermodynamics of silicate melt, which was developed in the field of terrestrial petrology, to the multi-component liquid-solid-gas system. Another importance is the determination of evaporation coefficients of minerals and silicate melt in laboratory. Details of models and experiments and the results to constrain the formation process of chondrules and CAIs will be discussed.