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## Critical Evaluation of Alumino-silicate Systems

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VDM Verlag Dr. Müller E.K. Okt 2013, 2013. Taschenbuch. Book Condition: Neu. 220x150x5 mm. Neuware - Thermodynamic knowledge of alumino-silicate systems is useful in steel and ceramic industries and for understanding geochemical processes. In this work the CALPHAD approach is applied to the thermodynamic modelling and assessments of the CaO-Al<sub>2</sub>O<sub>3</sub>-SiO<sub>2</sub>, MgO-Al<sub>2</sub>O<sub>3</sub>-SiO<sub>2</sub> and Y<sub>2</sub>O<sub>3</sub>-Al<sub>2</sub>O<sub>3</sub>-SiO<sub>2</sub> systems and their subsystems. The compound energy formalism is used for all the solution phases including mullite, YAM, spinel and halite. In particular, the ionic two sub-lattice model is applied to the liquid phase. Based on recent experimental investigations and theoretical studies a new species AlO<sub>2</sub>-1 is introduced to model liquid Al<sub>2</sub>O<sub>3</sub>. Thus, the liquid model corresponding for a ternary Al<sub>2</sub>O<sub>3</sub>-SiO<sub>2</sub>-M<sub>2</sub>O<sub>m</sub> system has the formula (Al<sub>3</sub>M<sub>m</sub>)P (AlO<sub>2</sub>-1, O-2, SiO<sub>4</sub>-4, SiO<sub>2</sub>)Q, where M<sub>m</sub> stands for Ca<sub>2</sub>, Mg<sub>2</sub> or Y<sub>3</sub>. This model overcomes the long-existing difficulty of suppressing the liquid miscibility gap in the ternary systems originating from the Al<sub>2</sub>O<sub>3</sub>-free side during the assessments. All the available phase diagram and thermochemical data are critically evaluated and finally a self-consistent thermodynamic dataset is achieved. 88 pp. Deutsch.



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### Reviews

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