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Prediction of the eutectic mixture formation of monovalent cation ternary salt mixture based on theoretical modeling and differential scanning calorimeter method

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Highlights

- The regularity of the eutectic mixture formation of molten salt system is predicted by the SVM learning algorithm.
- The liquidus temperature and eutectic composition of molten salt system are obtained by the thermodynamic modeling.
- The eutectic temperature and latent heat of molten salt system are determined by the DSC method.
- These theoretical modeling and DSC method can provide a preliminary screening test in the selection of molten salt material.

Abstract: In order to overcome phase separation problem of molten salt in long term service of the high-low temperature conversion, the eutectic salt mixture is usually suggested for heat transfer and energy storage media in concentrating solar power (CSP) plants. In the present work, the support vector machine (SVM) learning algorithm is firstly proposed to preliminarily predict the regularity of eutectic mixture formation of the AX-AY-AZ system, and then the eutectic properties of the NaCl-NaF-$NaNO_3$ system are

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