

**VAPOR PRESSURE MEASUREMENTS ON MOLTEN  
MIXTURES OF LiF, NaF, AND BeF<sub>2</sub>**

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Knowledge of the vapor pressure of fluoride salts is necessary in order to ascertain the potential for using these salts as a liquid first wall for fusion energy schemes. A combination of Thermogravimetric Analysis (TGA) and Knudsen Cell Mass Spectrometry (KCMS) was used to characterize the vapor phase above mixtures of LiF, NaF, and BeF<sub>2</sub>. The scope was limited to mixtures containing between 0.3 and 0.9 mole fraction BeF<sub>2</sub>. Measurements were performed on pure BeF<sub>2</sub> as well as the binary systems of LiF-BeF<sub>2</sub> and NaF-BeF<sub>2</sub>. For BeF<sub>2</sub>, values of  $\Delta H_{vap}$  were obtained by TGA and KCMS; and the vapor pressure was measured using TGA. All values were in agreement with literature values within experimental uncertainty. KCMS on the binary and ternary systems showed that the vapor phase was composed primarily of BeF<sub>2</sub>, and to a lesser extent the mixed dimers LiBeF<sub>3</sub> and NaBeF<sub>3</sub>. Data for the binary systems were found to be in agreement with the available literature sources. The ternary system was treated as a pseudobinary system by fixing the ratio of LiF to NaF. Data for both the ternary and binary systems were correlated in terms of the BeF<sub>2</sub> activity coefficient.