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Dear Editorial Board,

Journal of Nuclear Materials

On behalf of my co-authors and myself, I am hereby submitting our manuscript, entitled ``*An improved equation of state for Xe gas bubbles in gamma U-Mo*”

, for publication in the *Journal of Nuclear Materials*. This article provides the first standardized investigation of Xe bubble formation energy and binding energy in UMo, is the first investigation of bubble properties for bubbles larger than 3 nm in diameter in UMo, and provides two unique equations of state that exceed both the temperature and pressure regimes of applicability for existing equations of state for Xe in UMo, in addition to dramatically increasing the accuracy of pressure-volume-temperature predictions.

This work provides a tangible piece of information that will be utilized in both phase field and rate theory models of fission gas swelling evolution in UMo to improve their predictive and descriptive capabilities. Additionally, the underlying physics observed for highly pressurized Xe bubbles (deviation from Young-Laplace equilibrium) provides unique insight into the behavior of small fission gas bubbles in metallic nuclear fuel systems.

There are no previous or concurrent submissions related to this work.

Sincerely,

Benjamin Beeler