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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 ``*Atomistic calculations of the surface energy as a function of composition and temperature in gamma U-Zr to inform fuel performance modeling*”, for publication in the *Journal of Nuclear Materials*. This article provides the first set of surface energy calculations in gamma U-Zr. Additionally, this is the first implementation of the only existing U-Zr interatomic potential into the LAMMPS code, where a number of thermodynamic properties were calculated, validated against the literature, and expanded over a wider temperature and composition regime. Finally, the data from atomistics was utilized in the fuel performance code BISON to mechanistically inform the fission gas swelling model in U-Zr fuel, which demonstrated the importance of gathering science-based data inputs, rather than relying on historical parameters.

This work is new and we feel adds greatly to the scientific community.

Sincerely,

Benjamin Beeler