

# Investigation of Radiation Absorption Behavior of Some Refractory High Entropy Alloys for Use in Nuclear Technology

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In this study, a total of 13 refractory high-entropy alloys (HEAs) intended for use in nuclear technology were designed and their radiation shielding performances were systematically evaluated. The study focused on investigating the radiation attenuation characteristics of HEAs composed of refractory elements such as Zirconium, Tungsten, Niobium, Tantalum, and Molybdenum using PhyX/PSD software and MCNP simulation code. Among the designed compositions, the alloy coded ZrWNBaTaMo<sub>0.4</sub> demonstrated superior compatibility in terms of shielding parameters compared to the others. The findings of this research contribute valuable insights into the potential use of refractory HEAs in nuclear applications and present the ZrWNBaTaMo<sub>0.4</sub> alloy as a promising candidate, supporting its inclusion in the scientific literature.

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