

[PO-B2]Poster Session 2

Symposium B

Wed. Oct 31, 2018 5:45 PM - 8:00 PM Poster Hall

[P2-16]Microstructure evolution of cascade annealing in irradiated pure α -Zr from molecular dynamics simulations

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The microstructure evolution of cascade annealing in α -Zr crystals at $T=300\text{K}$, 400K , and 500K for energy of 2, 6 and 10 keV with initially driving directions $\langle 0001 \rangle$ and $\langle 01-10 \rangle$ of primary knocked atoms (PKA) are investigated by using molecular dynamics simulations. The results show that the relaxation time (τ_r) of cascades can play a role of an effective parameter for describing radiation damages during molecular dynamics simulations. of cascade with the larger surface area but with the same volume is much smaller, which promotes faster recombination of defects during cascade annealing. Energy is a crucial factor in the formation of cascade displacements of atoms and appearing of defects compared with temperature and direction of movement for initially knocking atoms.