

Investigating the Influence of Dopants on the Metallic Cu(111)-W(110) Interface for Fusion Reactor Applications.

Cu-W metallic multilayers are promising candidates for the first wall of future fusion nuclear reactors due to their high melting point, excellent thermal conductivity, and defect-annihilating properties. However, the accumulation of impurities generated during neutron irradiation can weaken the interface, leading to operational failure over time. Enhancing the interfacial properties of these multilayers is therefore critical. In this study, we employ density functional theory (DFT) to explore the effects of doping with potential elements on the interfacial properties of the Cu-W system. Our findings aim to provide insights into improving the durability and performance of Cu-W multilayers in fusion reactor environments.

Primary author: PEGU, Debamoy (Institute of Advanced Study in Science and Technology, Guwahati, India)

Co-authors: Mr SARMA, Dhruvanka (Institute of Advanced Study in Science and Technology, Guwahati, India); Prof. B SAHARIAH, Munima (Institute of Advanced Study in Science and Technology, Guwahati, India)

Presenter: PEGU, Debamoy (Institute of Advanced Study in Science and Technology, Guwahati, India)