

Heterophase interfaces and their effect on the properties of metal nanocomposites

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Nanocomposites are materials composed of phases with nanometer-scale dimensions. One of the unique features of such materials is that they contain an extremely large area per unit volume of interfaces between unlike phases. Indeed, this interface area may be so large, that the properties of the interfaces dominate the overall behavior of the composite. This effect creates both opportunities and challenges for technological applications. In this talk, I will present research on nanocomposite metals and the atomic-scale structure of the interfaces in these materials. Using examples drawn from both experiments and simulations, I will describe the influence of interfaces on the thermo-mechanical properties and radiation response of metal nanocomposites. I will conclude with a discussion of how tailoring the properties of interfaces may lead to the development of novel metal composites with unprecedented performance.