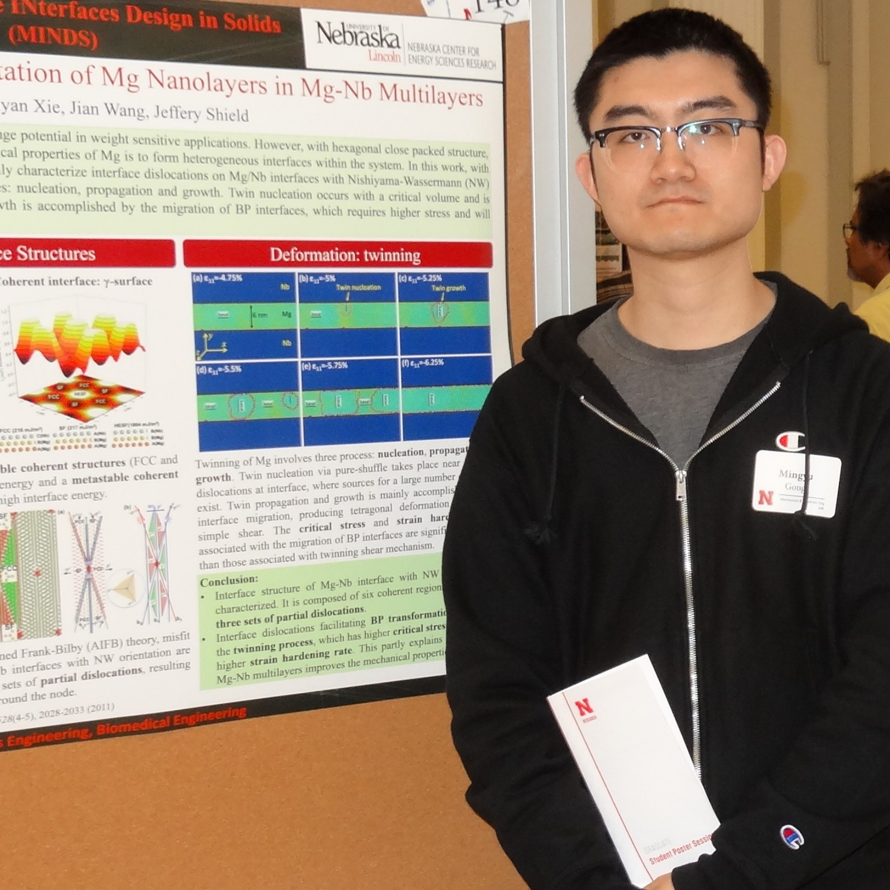
INterfaces Design in Solids
(MINDS)
UNIVERSITY OF
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tation of Mg Nanolayers in Mg-Nb Multilayers
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ge potential in weight sensitive applications. However, with hexagonal close packed structure,
cal properties of Mg is to form heterogeneous interfaces within the system. In this work, with
ly characterize interface dislocations on Mg/Nb interfaces with Nishiyama-Wassermann (NW)
es: nucleation, propagation and growth. Twin nucleation occurs with a critical volume and is
vth is accomplished by the migration of BP interfaces, which requires higher stress and will
ce Structures
Deformation: twinning
Coherent interface: γ-surface
Twin nucleation
Twin growth
ble coherent structures (FCC and
energy and a metastable coherent
high interface energy.
Twinning of Mg involves three process: nucleation, propagat
growth. Twin nucleation via pure-shuffle takes place near
dislocations at interface, where sources for a large number
exist. Twin propagation and growth is mainly accomplis
interface migration, producing tetragonal deformation
simple shear. The critical stress and strain har
associated with the migration of BP interfaces are signifi
than those associated with twinning shear mechanism.
Conclusion:
Interface structure of Mg-Nb interface with NW
characterized. It is composed of six coherent region
three sets of partial dislocations.
Interface dislocations facilitating BP transformati
the twinning process, which has higher critical stres
higher strain hardening rate. This partly explains
Mg-Nb multilayers improves the mechanical properti
ned Frank-Bilby (AIFB) theory, misfit
b interfaces with NW orientation are
sets of partial dislocations, resulting
round the node.
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