

**Surface Engineering of Alloys by
Colossal Super saturation with Interstitials**

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要旨

Properties of structural alloys (particularly austenitic stainless steel) can be considerably improved by infusing high concentrations of interstitial atoms from the surface. By exposing the alloy surface to a gas atmosphere providing carbon or nitrogen under so-called ara-equilibrium • conditions, these species can be interstitially dissolved to concentrations exceeding the equilibrium solubility limit by 100,000 times and without precipitating second phases (carbides/nitrides), which are often detrimental to alloy properties. This presentation will explain the physical principles and processing methods enabling such "surface engineering through colossal supersaturation" and demonstrate accomplished property improvements for a variety of alloys.

