

# The NIST Alloy Database: Enhancing Accessibility and Reliability for Thermophysical Property Data

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The accurate characterization of thermophysical properties in pure elements and alloys plays a pivotal role in various fields with applications such as heat transfer, material processing, thermal management, and new material development. Reliable and extensive databases are key to accessing this knowledge, enabling new scientific discoveries, supporting ongoing metrology development, and meeting the growing data requirements for advanced modeling and computational tools.

This presentation will focus on the NIST Alloy Database (DOI: 10.18434/M32153), highlighting its importance as a comprehensive resource for materials scientists, engineers, and researchers. It will outline the key features, potential applications, and how to access this valuable data resource through a simple web search or utilizing the available API for more automated data queries.

The talk will provide an update on the database's coverage of well-structured machine-readable data, including comprehensive metadata and provenance information. Additionally, a specific use case will be presented to demonstrate how the database can facilitate the queries for essential data for other scientific work. The availability of data regarding the speed of sound as it relates to temperature and pressure will be emphasized during the presentation.