

About ASM International and the CMD Network



- International professional society – 30,000 members
- 100th anniversary in 2013
- Strengths in structural materials, heat treatment, microstructure, materials characterization
- Long history as a data publisher: ASM Handbooks, Alloy Center Database, Alloy Phase Diagram Database, Medical Materials Database
- Materials Properties Database Committee (MPDC) (L. Bartolo, Chair)
- Partner in the Materials Data Management Consortium with NASA Glenn and Granta Design



- CMD Network founded by ASM in 2011 to undertake materials data projects to support ICME and to realize the goals of the U.S. Materials Genome Initiative
- Data management, curation, interchange
- Projects underway in partnership with NIST, U.S. Air Force, Northwestern University, and several other groups

MatML/ICME Data Formats

ICME Data Formats

- Critical component in Integrated Computational Materials Engineering (ICME) & Materials Genome Initiative Reports
- Arise from increased production of experimental & simulation data via modern characterization instruments & computational platforms
- Need evolvable materials-centered standardized approach to tag, store, & retrieve materials data effectively

Example data format -- MatML

- XML-based language for digital exchange of materials property data
- Developed in the 1990s / 2000s by a diverse working group led first by NIST then by ASM
- ASM now forming MPDC industry/government/academia subcommittee to revisit MatML & related formats
 - Steven Arnold, NASA; Tim Austin, JRC Institute for Energy and Transport; Laura Bartolo, Kent State University; Ursula Kattner, NIST; Debbie Mies and Andrew Miller, Granta Design; J.-C. Zhao, Ohio State University

Interoperability among related data formats

- Address ICME goal by connecting with data from different sources that share common meaning
- Exchange data with benefit of being maximally reusable in a variety of contexts
- Some related data formats: ThermoML; UnitsML; MatSeek; ChemML