From Discovery to Analysis: Making Metadata Work

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ABSTRACT

Across the many initiatives globally to improve and accelerate the development of new materials, there is a common strategy to take greater advantage of digital data that result from both computations and the laboratory. This includes re-using and integrating data from diverse sources, which means, in practical terms, being able to move and use data across different data systems and tools. The goal of freer data interchange has demanded a greater focus on interoperable metadata. In this presentation, I review the role metadata plays in science and engineering, from data discovery to integration to analysis. I will highlight some of the distinct challenges for metadata in materials science and engineering, and discuss what that means for creating metadata schemas and tools that can address those challenges. Along the way, I will introduce some of the developments at the US National Institute of Standards and Technology (NIST) to address some of those challenges. As data integration becomes ever more critical to the research and engineering process so will issues of interoperability; now is then a good time for a global discussion about metadata for materials science.