

THE MATERIALS SCIENCE AND ENGINEERING DEPARTMENT
COLLOQUIUM SERIES PRESENTS:

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Text and Data Mining for Material Synthesis.

Predictive materials modeling can provide properties of real and virtual compounds and will be available on demand, thereby enabling rapid iteration time in materials design. However, the allure (and necessity) of accelerated discovery that motivates computational materials design is diminished by the prevalent heuristic approaches to materials synthesis and optimization. This delay in moving from promising materials concept to validation, optimization, and scale-up is a significant burden to commercialization. I will describe our work to extract information from peer reviewed academic literature across a range of inorganic solid state materials synthesis approaches. We have demonstrated not only the potential of the natural language processing (NLP) approach to assemble materials data from the literature, but we have also shown that one can develop hypotheses for what synthesis conditions drive a particular target material outcome using learning approaches.

Elsa Olivetti is the Atlantic Richfield Associate Professor of Energy Studies in the Department of Materials Science and Engineering. Her research focuses on improving the environmental and economic sustainability of materials using methods informed by materials economics, machine learning, and techno-economic analysis. She has received the NSF Career award for her experimental research focused on beneficial use of industrial waste materials. Dr. Olivetti received her B.S. degree in Engineering Science from the University of Virginia. Her Ph.D. in Materials Science and Engineering from MIT was focused on development of cathode materials for lithium ion batteries.

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