

*A cognitive computing environment for materials research*

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Technological requirements in the industrial materials sector are demanding new materials with lower manufacturing costs, improved performance and sustainability, and reduced environment footprint. These requirements are driving the increased use of data and computation to generate discoveries and provide solutions in these sectors. For materials science and engineering vast amounts of data, and supporting information, are being generated and there is a requirement that these are efficiently connected and exploited. This presentation will describe a new research environment that harnesses the power of cognitive computing using machine learning (ML) and natural language processing (NLP) methods, combined with an array of databases and coupled with high-performance computing technologies to accelerate materials discovery. The environment includes structured databases – crystallographic structures (organic and inorganic, experiment and calculated), physical properties databases – (experiment and calculated); image databases (phase diagrams – metals and ceramics); unstructured database - journal and patent content, computational materials science software together with data and visual analytical capabilities. Content, functionality and applications of the environment will be presented.

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