Vital Statistics:
A new collaborative effort among materials researchers and computer scientists shows how test data can be captured and shared in an open repository, an important first step toward achieving the goals of the Materials Genome Initiative (MGI). Doubling the speed at which new materials are developed and deployed—MGI’s central objective—requires two things, neither of which exist today. One is a data infrastructure linking multiple repositories; the other is an incentive to fill it with data. However, the value that resides in data—along with the incentive for sharing it—cannot be realized without a fully functioning data infrastructure. This impasse hasn’t deterred everyone from pursuing the goals of MGI, as evidenced by several ad hoc projects paving the way toward a new era of materials development.

One such effort, the Materials Research Data Management (MRDM) Pilot Project, addresses the issue of how to capture, organize, and share existing test data. “There’s a huge amount of data in labs that no one, outside the lab, has access to,” says Eric Taleff, a mechanical engineering professor at the University of Texas (UT) at Austin. These “data islands,” as Taleff calls them, are a largely untapped resource, and he and others are working diligently to change that.

Success Factors:
One of Taleff’s collaborators on the MRDM project is Tom Searles, a materials database specialist with Materials Data Management Inc., Carmel, Ind. “Our goal was to develop a sample database to assess the level of effort required to fill it and get a better sense of the value potential of the data itself,” says Searles.

The data that Searles and others used to populate the database was derived from test results acquired by Taleff and one of his graduate students. “Our original objective was to improve our understanding of plasticity in wrought Mg alloy AZ31 sheet at high temperatures,” says Taleff. The work was supported by General Motors, which, along with UT, agreed to allow the data to be used in the Pilot Project.

According to Searles, the data includes specimen details, testing information, and tensile results. Related crystallographic and micrograph data has also been uploaded along with data citations that provide a record of project credits and ancillary information.

About the Innovators:
Eric Taleff is a professor with the Department of Mechanical Engineering at the University of Texas at Austin. Tom Searles is a materials engineer and database specialist with Materials Data Management Inc., Carmel, Ind. Other members of the MRDM Pilot Project team include Stuart Dyer from Granta Design, and Scott Henry and Larry Berardinis from ASM International’s Computational Materials Data Network.

What’s Next:
The Pilot Project database is nearly complete and is expected to be open to the public sometime this month. Access is free, requiring only basic registration. The database will be accessible at cmdnetwork.org. The consensus among the MRDM project team is to keep expanding the database and begin linking it to other such repositories.

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