

Why Top Materials Company Idemitsu Partnered with Enthought to Accelerate Product Innovation using Materials Informatics

"Increasing both Materials Informatics capability and utilization by our R&D staff has strategic importance and is critical to realizing our broader digital transformation vision. Enthought has been a valuable partner in helping us achieve our goals."

– Toshiaki Kusaba, Ph.D., Idemitsu, Senior General Manager,
Lithium Battery Material Department, Advanced Materials Company

Idemitsu's Path to R&D Digital Transformation

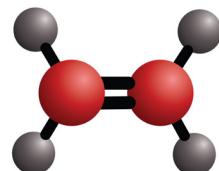
Idemitsu has a rich 100 year history of developing products alongside leading OEMs from project onset, and today is looking to bring new products to market that demonstrate their commitment to a carbon neutral and circular society. As one of the most innovative energy materials manufacturers in the world, Idemitsu recognizes that digital transformation is essential to accelerate IP generation and get products to market faster. Their Advanced Technology Research Laboratories corporate research group, which promotes medium- to long-term R&D in collaboration with multiple business units, is central to advancing corporate goals and initiatives.



When Idemitsu brought on Enthought as their digital transformation partner, one of the critical decisions made was where to start. The recommended first step: invest in your own research teams.

Starting with the Scientists

Genuine transformation today calls for less siloed skills and requires a much tighter interaction between data science, software engineering, and domain expertise. Scientists and engineers themselves must acquire new digital skills, adopt a strong data culture, and be empowered to bring digital innovation into their lab and their business.



Building upon the deep expertise of senior scientists, while ensuring that the next generation of scientists have the necessary skills to take full advantage of digital advances, is an accessible and foundational starting point.

See back to learn about the transformation of Idemitsu's scientists and lab.

The Enthought Materials Informatics Acceleration Program

Idemitsu's team of scientists with the Advanced Technology Research Laboratories group were enrolled in Enthought's unique [Materials Informatics Acceleration Program](#) to build-up internal digital R&D capabilities. With Enthought's guided partnership, the team developed their digital skills by tackling real in-house challenges and crafting Materials Informatics (MI) solutions that generated immediate value.

During the 6-month MI training and apprenticeship program, future digital R&D leaders were cultivated, creating a community of practice to catalyze broader digital culture change at Idemitsu. Participants finished the program equipped to build data-driven decision-support tools using machine learning and AI to accelerate R&D innovation.

"I was very impressed with how quickly our researchers learned foundational Materials Informatics skills and then went on to apply them to real problems. Enthought's MI Acceleration Program allowed us to improve our R&D processes much faster than we would have on our own." – Hiroshi Mizuno, Ph.D., Idemitsu, General Manager, Strategy & Business Planning Office, Innovation Strategy Department, Advanced Materials Company

Leveraging Materials Informatics within Traditional Research

As part of the Enthought approach, Idemitsu started with a meaningful yet solvable challenge that a learning team of researchers could tackle with guidance. The team faced a common challenge in their search for new catalysts for carbon utilization – inefficiencies from time-consuming and resource-heavy traditional exploratory research methods and processes.

When developing new catalysts for carbon utilization, traditional lab-scale experiments are very laborious and time consuming, and the number of candidate materials are practically endless. Early-stage exploratory research is typically driven by trial and error, leading to slow progress. A large amount of expert time is required to manually review old data, put together a shortlist of candidates, create an experimental plan, and then execute.

Material Informatics Solution Accelerates the Exploration for Novel Materials in Strategic Research Area

Through the Enthought MI Acceleration Program, Idemitsu researchers were empowered to create their own software solution that organized historical experimental data, automated computational chemistry data generation, leveraged open databases, and utilized machine learning and AI to help guide candidate molecule selection and experimentation in the lab.



Idemitsu saw immediate impact of the new internally-developed Materials Informatics solution and achieved property performance targets several weeks ahead of schedule, thereby allowing them to take a step forward in the highly competitive field of new materials development. In the coming year, MI solutions are expected to save months of effort.

Contact us at info@enthought.com to get connected to an Enthought Material Informatics expert.