

# **Integrated Computational Materials Design: From Genome to Flight**

by

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**Time: 13:30 - 14:30**

**Place: 2<sup>nd</sup> conference room**

The historic first flight on December 17, 2010 of the Ferrium S53 Stainless Landing Gear Alloy represents the first fully computationally designed and flight qualified material. This achievement was made possible by the founding of a multidisciplinary research consortium in 1985, which was in turn inspired by the emergence in 1984 of ThermoCalc as a second-generation CALPHAD software and database system offering a new level of accuracy raising the possibility of true materials design. The steady improvement in accuracy of tools and databases has continued to broaden materials design capability, and its integration with the efficient probabilistic framework of the AIM methodology has continued to accelerate the design and qualification cycle. The higher accuracy of new simulation tools has demanded higher fidelity microstructural characterization now enabled by a suite of 3D tomographic tools integrated under the recent ONR/DARPA "D3D" Digital Structure initiative.

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