



## Weblinks: Superalloy Technical Community - Research Facilities

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The following are links to superalloy research facilities.

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GROUP	FACILITY	WEBLINK	DESCRIPTION
<b>High Temperature Materials Center, Hiroshi Harada (Managing Director)</b>	<i>National Institute for Materials Science (NIMS)</i>	<a href="#">[Launch Site]</a>	"In this center, we develop high temperature materials for 1700C ultra-efficient gas turbines with applications in power generation, small but efficient gas turbines for local power systems, next generation jet engines, and in other high temperature systems. These materials include Ni-base single crystal superalloys with new coating systems, as well as alloys with new concepts, e.g., platinum group metals (PGMs)-base refractory superalloys, Cr-base alloys. Also, Ni-Co wrought alloys with the temperature resistance of 750°C are developed as new generation turbine disk materials. Materials design of empirical and theoretical approaches and microstructure analysis to support the alloy design and developments are also conducted with a major importance. In addition, demonstration tests using an actual gas turbine, improvement of temperature resistance and efficiency of gas turbines and jet engines are being carried out. Also, to demonstrate the benefits of such technology, the effectiveness of CO2 reduction and prevention of global warming are being tested."



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<b>NRIM Ni-base Superalloy Home Page</b>	<i>National Research Institute for Metals (NRIM)</i>	<a href="#">[Launch Site]</a>	Has a group interested in developing Ni-base superalloys with higher temperature capabilities for aerospace and power industries. "A newly developed 3rd generation Superalloy, TMS 75, which contains 5wt% Re is easy to do heat treatment, and has stable microstructure with creep strength comparable with or even higher than CMSX-10. TMS-75 is now being evaluated in private companies inside and outside Japan. The modification is also being made by using ADP and CVM toward the 4th generation SC superalloys. Light(density=8.0-8.2) SC superalloys, high Cr SC superalloys and 3rd generation DS superalloy TMD-103 are also designed and tested in our group. Alloy Design Program (ADP) and Cluster Variation Method(CVM) are developed and used in the alloy development. The location of solute atoms within the structures in the alloys were investigated using atom-probe field ion microscopy (APFIM) and compared with predictions by ADP and CVM."
<b>Metallic Materials and Processing - DMMP</b>	<i>ONERA</i>	<a href="#">[Launch Site]</a>	Development and burn-in of the "superalloy/joining layer/thermal barrier" system for turbine blade applications. Development of superalloys for turbine discs and blades.
<b>Materials Division - Advanced Metallics Branch</b>	<i>NASA Glenn Research Center</i>	<a href="#">[Launch Site]</a>	Mission: Development and Characterization of Metallic Materials for Aerospace Applications.
<b>AFRL Materials and Manufacturing Directorate (AFRL/ML)</b>	<i>Air Force Research Lab</i>	<a href="#">[Launch Site]</a>	ML develops materials, processes, and advanced manufacturing technologies for aircraft, spacecraft, missiles, rockets, and ground-based systems and their structural, electronic and optical components.



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<b>Materials Science and Technology Division</b>	<i>Oak Ridge National Lab</i>	<a href="#">[Launch Site]</a>	Conducts fundamental and applied materials research for basic energy sciences programs and a variety of energy technologies, including energy efficiency, renewable energy, transportation, conservation, fossil energy, fusion energy, nuclear power, and space exploration. The Corrosion Science and Technology group is one of the 25 groups within the Materials Science and Technology Division which has research ongoing in superalloys.
<b>CNRS, Centre National de la Recherche Scientifique (National Center for Scientific Research)</b>		<a href="#">[Launch Site]</a>	The Centre National de la Recherche Scientifique (National Center for Scientific Research) is a government-funded research organization, under the administrative authority of France's Ministry of Research.
<b>C. E. M. E. S.</b>	<i>CNRS, Centre National de la Recherche Scientifique (National Center for Scientific Research)</i>	<a href="#">[Launch Site]</a>	C.E.M.E>S is a research laboratory directly attached to the CNRS. This link leads to the MC2 (Groupe Matériaux Cristallins sous Contrainte or Crystalline Materials under Stress).
	<i>Beijing Institute of Aeronautical Materials (BIAM)</i>	<a href="#">[Launch Site]</a>	<a href="#">Reference: Superalloys in China by Charles Feng, University of Science and Technology Beijing</a>
<b>Insitute of Metal Research</b>	<i>Chinese Academy of Science</i>	<a href="#">[Launch Site]</a>	<a href="#">Reference: Superalloys in China by Charles Feng, University of Science and Technology Beijing</a>