

# MODUMETAL

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## **National Science Foundation Grants Award to Modumetal for High Temperature Diesel Engine Coatings**

(Seattle, Washington) Seattle-based Modumetal, Inc announced today that it has received a National Science Foundation (NSF) award for a cutting-edge new coating that is expected to improve the operating performance of diesel engines. Modumetal's coating technology will provide for greater operating temperatures to be achieved in diesel engines, thus improving fuel efficiency and reducing emissions.

There is an ever increasing demand in the marketplace and in the regulatory environment for improvements in the fuel efficiency of transportation vehicles. A major limiting factor in meeting these needs is the availability of advanced materials that can survive the requisite operating temperatures. Modumetal's Thick Thermal Barrier Coating (T-TBC), which will be developed under the subject contract, is such a material that will provide the basis for high-temperature, high-efficiency automobile and truck diesel engines by reducing the apparent temperature at the engine's base metal and protecting against abrasion and temperature-accelerated degradation.

The project, which will be lead by Modumetal's Dr. John Whitaker, will involve specific application of a novel, nanolaminated T-TBC for insulation of critical engine components such as piston crowns, valve faces, and cylinder heads, and lower the heat rejected to the cooling system, which in turn increases the amount of the combustion energy converted to useful work.

From an environment protection standpoint, the additional advantages afforded by higher diesel operating temperatures include reductions in both carbon emissions (unburned hydrocarbons, particulates, and CO<sub>2</sub>) and noise. According to TBC Vice President, Todd Wallen, "Modumetal's TBCs are not only reducing the emission of carbon into the environment, but are also eliminating the creation of additional waste of natural resources by ensuring longer life and efficiency in equipment and operations. So that as this NSF Award elevates further the performance advancements made possible by Modumetal's unique coating technology, the recognition also punctuates the growing economic and positive environmental impact of this broad nanotechnology field."

"The NSF Award further validates the progress we've made both as a company, and as a solutions provider in a key U.S. industry which needs such innovative technologies as this one in order to secure a position in the forefront of a competitive and demanding international marketplace," said Modumetal CEO, Christina Lomasney.

### **About Modumetal's Manufacturing Process**

The manufacturing process, Modumetal by Design (MbD), is a low-cost, scalable, and net-shape descendant of electrochemical manufacturing. MbD is a non-line-of-site, ambient-temperature process that supports the production of a wide range of fully dense metals, alloys and net-shape parts. MbD differs from conventional electrochemical plating and forming in its precise, time-varying control of plating conditions at the workpiece surface, producing laminated structures with wavelengths approaching several nanometers. The Modumetal technology is the subject of several issued and pending patents.

### **About Modumetal**

Modumetal ([www.modumetal.com](http://www.modumetal.com)), based in the heart of Seattle, Washington, is realizing the commercial potential of a unique class of nanolaminated materials. Modumetal is creating materials that will change design and manufacturing of metals by redefining structural, corrosion and high temperature performance. Modumetal represents a whole new way of producing parts and is leveraging nanotechnology to achieve this unprecedented performance. Modumetal is made by a "green" electrochemical manufacturing approach, which reduces the carbon footprint of conventional metals manufacturing at the same time that it revolutionizes materials performance.

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