

199511971A

JET ENGINE APPLICATIONS FOR MATERIALS WITH
NANOMETER-SCALE DIMENSIONS

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The performance of advanced military and commercial gas turbine engines is often linked to advances in materials technology. High performance gas turbine engines being developed require major material advances in strength, toughness, reduced density and improved temperature capability. The emerging technology of nanostructured materials has enormous potential for producing materials with significant improvements in these properties. Extraordinary properties demonstrated in the laboratory include material strengths approaching theoretical limit, ceramics that demonstrate ductility and toughness, and materials with ultra-high hardness. Nanostructured materials and coatings have the potential for meeting future gas turbine engine requirements for improved performance, reduced weight and lower fuel consumption.

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