



COLLEGE OF  
ENGINEERING, ARCHITECTURE  
AND TECHNOLOGY

CEAT

**DISTINGUISHED  
LECTURE**

DATE

**MARCH 31**

TIME

**3:30-5PM**

LOCATION

**102 ATRC**



## PROGRESS IN AERO-PROPULSION: THE ROLE OF MATERIALS

### Dr. James Williams

Distinguished Research Professor | University of North Texas  
*Member of National Academy of Engineering*

► **BIO** Dr. Jim Williams is a Distinguished Research Professor at the University of North Texas. He was a Professor of Materials Science and Engineering and Honda Chair from Summer 1999 until Fall 2010. He served as Dean of Engineering at OSU from 2001-2004. Until March 1999 he was General Manager, Materials and Process Engineering Department, GE Aircraft Engines. He is a member of the National Academy of Engineering, a Fellow of TMS/AIME and a Fellow of ASM International. He is the recipient of numerous awards including the 1992 ASM Gold Medal, the 1993 TMS/AIME Leadership Award and the 2010 AIME James Douglas Gold Medal. He was inducted into the GE Aircraft Engines Propulsion Hall of Fame in 2007. In 2010 he also was elected an Honorary Member of the Japan Institute of Metals and received the ASTM Committee B10 Russ Ogden Award. In 2011 he was selected to be a Distinguished Life Member of ASM International and received the Henry Marion Howe Medal of ASM International (with A. Pilchak and R. Williams). In 2012 he received the TMS Champion H. Mathewson Award (with A. Pilchak and R. Williams). From 1989-1995 he was Chairman of the National Materials Advisory Board. He was a member of The Advisory Committee for the Division of Engineering and Physical Sciences of the National Research Council from 1999-2004, The Materials Science and Technology Division Visiting Committee at Los Alamos National Laboratory from 1999-2004 and The Engineering Division Science and Applications Advisory Board at Oak Ridge National Laboratory from 1996-2000. Prior to joining GE in 1988 he spent 13 years at Carnegie Mellon University as Professor ('75-'80), President of Mellon Institute ('80-'83) and Dean of Engineering ('83-'88). Prior to 1975 he worked for Rockwell as a researcher, Group Leader of Physical Metallurgy Research and a member of the Aerospace Group Corporate Staff managing a large, diverse technology program. Prior to that, he worked for Boeing in the quality and engineering divisions. His last assignment with Boeing was a Group Leader of a group working primarily on Ti alloy R.

► **ABSTRACT** The performance of aircraft turbine engines is on a short list of products that critically depend on materials. This talk will trace the role of better materials and manufacturing processes in making turbine engine performance as good as it is today. In this presentation the term performance includes thrust, durability, fuel consumption, noise and emissions since all of these characteristics are factors in the choice and use of commercial aircraft engines today. The talk will show examples of how these parameters have changed over time and how better/improved materials and processing have contributed to the current status of engines today. Finally, a few comments on the viability of supersonic commercial air travel will be offered. The speaker looks forward to good discussion during and after the conclusion of the presentation.