

William M. Kane, III, Ph.D., P.E.
Senior Engineer

Professional Profile

Dr. William M. Kane is a Senior Engineer in Exponent's Materials and Corrosion practice. Dr. Kane focuses on root cause failure analysis of structural materials and mechanical systems, ferrous and non-ferrous metals analysis, structure/property relationships, chemistry and heat treatment effects on the strength and performance of materials, fracture analysis of plastics and elastomers, fracture mechanics, and environmental effects on materials. He has examined the mechanical behavior of structures, products, and components regarding issues of strength, stability, friction, and wear.

Dr. Kane's research includes fracture analysis and microscopy, corrosion, analysis of implant and device materials, materials selection, and the design and failure of welds and welded structures. He provides consultation on cranes and lifts, including wire rope, chain, hook, and structural failures; railroad components such as tanks, valves, cushions, and suspension components; construction equipment; medical devices and implants; elevator components; process piping; pressure vessels; oil tanks; industrial and pharmaceutical production equipment; automotive and trucking chassis and suspension components; fire suppression systems including piping and sprinklers; walkway surfaces, and consumer products.

Prior to joining Exponent, Dr. Kane pursued materials research at the University of Pennsylvania, where he specialized in brittle failure of high temperature aerospace alloys and power-generation turbine materials. His expertise includes fracture in aggressive environments and microstructure effects on strength and failure.

Academic Credentials and Professional Honors

Ph.D., Materials Science and Engineering, University of Pennsylvania, 2005

M.S., Materials Science and Engineering, University of Pennsylvania, 2003

B.S., Materials Science and Engineering, University of Pennsylvania, 2001

Ashton Fellowship, 2001–2005; Wilson S. Yerger Memorial Fellowship, 2001–2002; Materials Science and Engineering Faculty Appreciation Award, 2001; M.W. Corbett Scholarship, award to a varsity athlete enrolled in the School of Engineering and Applied Science, 1999–2001

Licenses and Certifications

Licensed Professional Engineer, Maryland, #38278

Licensed Professional Engineer, Pennsylvania, #PE079233

Licensed Professional Engineer, Delaware, #17477

Certified Welding Inspector, Certificate No. 07040261, April 2007

Academic Appointments

Adjunct Faculty, Drexel University, Department of Materials Science and Engineering

- MATE 341 – Defects in Crystalline Solids, 2010–present

Lecturer, University of Pennsylvania, Department of Materials Science and Engineering

- ENG 101 – Introduction to Engineering, 2010
- MSE 250 – Nanoscale Materials, 2009
- MSE 405/505 – Mechanical Properties of Macro/Nanoscale Materials, 2009

Publications

Ianuzzi A, Kurtz S, Kane W, Shah P, Siskey R, von Ooij A, Bindal RK, Ross ERS, Lanman T, Buttner-Janzen K, Isaza J. In vivo deformation, surface damage, and biostability of retrieved dynesys systems. *Spine* 2010 Nov; 35(23):1310–E1316.

Ianuzzi A, Kurtz S, von Ooij A, Bindal RK, Ross ERS, Bohinski RJ, Kane W, Siskey R, Shah P, Villarraga ML. In vivo deformation, surface damage, and biostability of retrieved dynesys components for posterior dynamic stabilization. Philadelphia Spine Research Symposium, Philadelphia, PA, October 9, 2007.

Krupp U, Wagenhuber PEG, Kane W, McMahon CJ. Improving resistance to dynamic embrittlement and intergranular oxidation of nickel based superalloys by grain boundary engineering type processing. *Materials Science and Technology* 2005; 21(1):1247–1254, November.

Krupp U, Kane W, Jacobs T, McMahon CJ. On the mechanism of quench cracking in Rene 95 nickel-based superalloy. *Materials Science and Engineering A* 2005; 402(1–2):42–46, August 15.

Kane W, Krupp U, Laird C, McMahon CJ. Brittle intergranular fracture of a Ni-based superalloy at high temperatures by dynamic embrittlement. *Materials Science and Engineering A* 2004; 387–389:409–413, December 15.

Kane W, McMahon CJ. Oxygen-induced dynamic embrittlement in nickel-based superalloys. *Interfacial Engineering for Optimized Properties III*, MRS 2004; 819:111–120.

Krupp U, Kane W, Pfaendtner, Liu XY, Laird C, McMahon CJ. Oxygen-induced intergranular fracture of the nickel-based alloy IN718 during mechanical loading at high temperatures. *Materials Research* 2004; 7(1):35–41.

Liu XY, Kane W, McMahon CJ. On the suppression of dynamic embrittlement in Cu-8wt%Sn by an addition of zirconium. *Scripta Materialia* 2004; 50(5):673–677, March.

Krupp U, Kane W, Liu XY, Dueber O, Laird C, McMahon CJ. The effect of grain-boundary-engineering-type processing on oxygen-induced cracking of IN718. *Materials Science and Engineering A* 2003; 349(1–2):213–217, May 25.

Project Experience

Dr. Kane has experience testifying in deposition, as well as at both trial and arbitration. He has aided industry-leading corporations in the design and analysis of parts and products, and provided the insurance industry technical support in major claims decisions.

Peer Reviewer

- Journal of Biomedical Materials Research: Part B—Applied Biomaterials
- ASME International Mechanical Engineering Congress & Exposition, 2011

Professional Affiliations

- ASM International, 2006–present (member)
- American Welding Society, 2006–present (member)
- ASTM International, 2007–present (member)
 - Committee A1 on Steel, Stainless Steel and Related Alloys
 - Committee F13 on Pedestrian/Walkway Safety and Footwear