

Dr. Yutai Katoh

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Educational Qualification:

- PhD, Materials Science, University of Tokyo, Tokyo, Japan (1994)
- MS, Materials Science, University of Tokyo, Tokyo, Japan (1991)
- BS, Metallurgy and Materials Science, University of Tokyo, Tokyo, Japan (1988)

Professional Experience:

- Research Staff Member, Materials Science and Technology Division, Oak Ridge National Laboratory, Oak Ridge, TN, USA (2003 – present)
- Associate Professor, Institute of Advanced Energy and Graduate School of Energy Science, Kyoto University, Kyoto, Japan (1996 – 2003)
- Assistant Professor, Research Operations Division, National Institute for Fusion Science, Toki, Japan (1995 – 1996)

Research Interest:

- Development and characterization of ceramics, graphite, composites and other advanced materials for high temperature and severe environment applications.
- Effects of neutron and high energy particle irradiation in metals, alloys and ceramics, with emphases on irradiation effects on properties and microstructures of silicon carbide and influences of helium on irradiation effects in metals and ceramics.
- Development and qualification of emerging materials for nuclear energy.

Teaching Experience:

- Co-supervised ~20 PhD students and numerous MS students and gave courses on energy-related materials science and engineering at the Graduate School of Energy Science, Kyoto University, Japan (1996-2003).

Honors and Awards:

- Fusion Power Associates Board of Directors' Excellence in Fusion Engineering Award, 2006, for his outstanding scientific contributions and leadership role in the development of new, attractive silicon carbide composites for potential use in fusion power plants of the future.
- Invited participation to international conferences and symposia at numerous occasions.

Major Professional Activities:

- Chair, IEA Fusion Materials Agreement Working Group on SiC/SiC Ceramic Composites for Fusion Energy Applications
- Chair, ASTM International Subcommittee C28.07 on Ceramic Matrix Composites
- Member, ASME Codes and Standards Committee, Subgroup on Graphite Core Components (SC III)
- Member, The American Ceramic Society, American Nuclear Society, ASTM International

Technical Inventions:

- 13 patents published (domestic and PCT). Mostly related to processing of silicon carbide-based ceramic composites.

Recent Conference Organization:

- Organizer, Symposium on Advanced Ceramics and Composites for Nuclear and Fusion Applications, 35th International Conference on Advanced Ceramics and Composites, January 23-28, 2011, Daytona Beach, Florida.
- Scientific Committee member, 7th International Conference on High Temperature Ceramic Matrix Composites, September 20-22, 2010, Bayreuth, Germany.
- International Advisory Committee member, CIMTEC 2010, 5th Forum on New Materials, June 13-18, 2010, Montecatini Terme, Italy.
- International Program Committee member, 14th International Conference on Fusion Reactor Materials, September 6-11, 2009, Sapporo, Japan.
- Co-organizer, Symposium on Processing, Properties and Performance of Engineering - Ceramics and Composites, the 32nd International Conference & Exposition on Advanced Ceramics & Composites, January 21-26, 2007, Daytona Beach, Florida.
- Co-organizer, Symposium on Processing, Properties and Performance of Engineering Ceramics and Composites, the 31st International Conference & Exposition on Advanced Ceramics & Composites, January 21-26, 2007, Daytona Beach, Florida.
- Co-organizer, Symposium on Ceramics in Nuclear and Alternative Energy Applications, the 30th International Conference & Exposition on Advanced Ceramics & Composites, January 22-27, 2006, Cocoa Beach, Florida.

- Co-organizer, 2nd JSME/ASME International Conference on Materials and Processing, June 19-22, 2005, Seattle, Washington.
- Co-organizer, The 11th International Conference on Fusion Reactor Materials, December 7-12, 2003, Kyoto, Japan.

Selected Publications:

Recent invited paper presentations (*Full list is available upon request*)

1. Y. Katoh, L. Snead, "Thermal conductivity of neutron-irradiated silicon carbide composites," invited keynote presentation at the 7th International Conference on High Temperature Ceramic Matrix Composites, September 20-22, 2010, Bayreuth, Bavaria, Germany.
2. Y. Katoh, Ceramic Composites for Fusion and Fusion Applications, invited presentation at CIMTEC 2010, International Conference on Model Materials and Technologies, 5th Forum on New Materials, June 13-18, 2010, Montecatini Terme, Italy.
3. Y. Katoh, L. Snead, A. Hasegawa, S. Kondo, "A Review of Helium Effect in Advanced Ceramics and Ceramic Composites," The First International Workshop on Measuring, Modeling and Managing Helium-DPA Effects, Paul Scherrer Institut (PSI), Switzerland, June 15-17, 2009.
4. Y. Katoh, L. Snead, T. Burchell, "Ceramic Composites for Advanced Nuclear Energy Applications," 9th International Symposium on Ceramic Materials and Components for Energy and Environmental Applications, November 10-14, 2008, Shanghai, China.
5. Y. Katoh and L.L. Snead, "Operating Temperature Window for SiC Ceramics and Composites in Fusion Energy Applications," 18th Topical Meeting on the Technology of Fusion Energy (TOFE), September 28-October 2, 2008, San Francisco.
6. Y. Katoh, "Silicon Carbide for Fusion and Nuclear Applications: Near-term Opportunities and Critical Issues," 2nd International Symposium on New Frontier of Advanced Si-Based Ceramics and Composites, June 8-11, 2008, Jeju, Korea.

Publications:

Greater than 200 authored or co-authored peer-reviewed scientific articles in journals and conference proceedings (*Full publication list is available upon request*)

1. Katoh, Y., S. Kondo, and L.L. Snead, DC Electrical Conductivity of Silicon Carbide Ceramics and Composites for Flow Channel Inlet Applications, *Journal of Nuclear Materials*, (2009) 386-388: p. 639-642.
2. Snead, L.L., T.D. Burchell, and Y. Katoh, Swelling of Nuclear Graphite and High Quality Carbon Fiber Composite Under Very High Irradiation Temperature, *Journal of Nuclear Materials*, (2008) 381: p. 55-61.

3. Kondo, S., Y. Katoh, and L.L. Snead, Microstructural defects in SiC neutron irradiated at very high temperatures, *Journal of Nuclear Materials*, (2008) 382: p. 160-169.
4. Katoh, Y., S. Kondo, and L.L. Snead, Microstructures of beta silicon carbide after irradiation creep deformation at elevated temperatures, *Journal of Nuclear Materials*, (2008) 382: p. 170-175.
5. Morley, N.B., et al., Recent US research and development for the dual coolant blanket concept, *Fusion Engineering and Design*, (2008) 83: p. 920-927.
6. Snead, L.L., et al., Candidate Structural Materials for In-Core VHTR Application, Anaheim: American Nuclear Society (2008).
7. Kondo, S., Y. Katoh, and L.L. Snead, Unidirectional formation of tetrahedral voids in irradiated silicon carbide, *Applied Physics Letters*, (2008) 93: p. 163110-1-3.
8. Snead, L.L., et al., Ceramic composites for near term reactor application, in *The 4th International Topical Meeting on High Temperature Reactor Technology (HTR-2008)* (2008), Washington, D.C.: ASME.
9. Nogami, S., et al., Oxidation behavior of SiC/SiC composites for helium cooled solid breeder blanket, *Fusion Engineering and Design*, (2008) 83: p. 1490-1494.
10. Wong, C.P.C., et al., ITER Test Blanket Module Functional Materials, *Journal of Nuclear Materials*, (2007) 367-3.