

Haluk Ersin Karaca

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B.S.	Mechanical Engineering, <i>Bogazici University, Istanbul, Turkey</i> Senior Thesis: “Critical Speeds of Rotating Shafts”	2001
M.S.	Mechanical Engineering, <i>Texas A&M University, College Station, TX</i> Thesis: “Effects of Thermo-Mechanical Treatment on the Shape Memory Behavior of NiTi and CoNiAl Alloys” Advisor: Prof. Ibrahim Karaman	2003
Ph.D.	Mechanical Engineering, <i>Texas A&M University, College Station, TX</i> Dissertation: “Magnetic Field-induced Phase Transformation and Variant Reorientation in NiMnGa and NiMnCoIn Magnetic Shape Memory Alloys” Advisor: Prof. Ibrahim Karaman	2007
Postdoc	Mechanical Engineering, <i>Texas A&M University, College Station, TX</i>	2007
Associate Professor	Mechanical Engineering, <i>University of Kentucky, Lexington, KY</i>	2013
Assistant Professor	Mechanical Engineering, <i>University of Kentucky, Lexington, KY</i>	2008

Selected Publications (AS OF 1/10/2017:GOOGLE SCHOLAR H-INDEX:22, I-10 INDEX:35, CITATIONS 1791; SCOPUS H-INDEX: 19; GOOGLE SCHOLAR PROFILE: [HALUK E KARACA](#))

1. S.M. Saghaian*, **H.E. Karaca**, M. Souri*, A.S. Turabi*, R.D. Noebe, “Tensile shape memory behavior of Ni_{50.3}Ti_{29.7}Hf₂₀ high temperature shape memory alloys, *Materials & Design*, Vol 101, p 43-46, 2016
2. **H.E. Karaca**, A.S. Turabi*, Y.I. Chumlyakov, I. Kireeva, H. Tobe*, B. Basaran*, “Superelasticity of [001]-oriented FeNiCoAlNb Ferrous Shape Memory Alloys”, *Scripta Materialia*, Vol 120, p 54-57, 2016
3. S. Saedi*, A.S. Turabi*, M.T. Adnani, C. Haberland, **H.E. Karaca**, M. Elahinia, “The influence of heat treatment on the thermomechanical response of Ni-rich NiTi alloys manufactured by selective laser melting, *Journal of Alloys and Compounds*, Vol 677, p 204-210, 2016
4. Peizhen Li*, **H.E. Karaca**, YT Cheng "Spherical Indentation of NiTi-based Shape Memory Alloys" *Journal of alloys and compounds*, Vol 651, p 724-730, 2015
5. I. Kaya*, H. Tobe*, **H.E. Karaca**, M. Nagasako, R. Kainuma, Y.I. Chumlyakov, “Positive and negative two-way shape memory effect in [111]-oriented Ni₅₁Ti₄₉ single crystals”, *Materials Science and Engineering: A*, Vol 639, p. 42-53, 2015
6. **H.E. Karaca**, E. Acar*, H. Tobe*, S. Saghaian*, “Review: NiTiHf-based shape memory alloys”, *Materials Science and Technology*, Vol 30 (13a), p 1530-1544, 2014
7. **H. E. Karaca**, S. Saghaian*, G. Ded*, B. Basaran*, H Tobe*, H.J. Maier, R. Noebe, Y.I. Chumlyakov, “Effects of nanoprecipitation on the shape memory and material properties of an Ni-rich NiTiHf high temperature shape memory alloy”, *Acta Materialia*, Vol 61,p 7422-7431, 2013
8. **H.E. Karaca**, E. Acar*, G.S. Ded*, B. Basaran*, H.Tobe*, R. D. Noebe, G. Bigelow, Y.I. Chumlyakov, “Shape Memory Behavior of a High Strength Polycrystalline NiTiHfPd Alloy”, *Acta Materialia*, Vol 61, p 5036, 2013

9. **H.E. Karaca**, I. Karaman, B. Basaran, Y.I. Chumlyakov , H.J. Maier, “Magnetic Field-Induced Martensitic Phase Transformation in NiMnCoIn Ferromagnetic Shape Memory Alloys,” *Advanced Functional Materials*, Vol 19 (7), p 983-998, 2009
10. **H.E. Karaca**, I. Karaman, B. Basaran, D.C. Lagoudas, Y.I. Chumlyakov , H.J. Maier, “On The Stress-Assisted Magnetic Field-Induced Phase Transformation in Ni₂MnGa Ferromagnetic Shape Memory Alloys”, *Acta Materialia*, vol 55, p 4253-4269, 2007

Synergistic Activities

- Director of ME Graduate Studies
- Member of ASME, TMS, SPIE
- Member of TMS Phase Transition and ASME Adaptive Structures and Material Systems Committee
- Co-Chair of The International Forum on Sustainable Manufacturing in 2013 & 2014
- Member of ASME Adaptive Structures and Material Systems Technical Committee
- Organizer of Additive Manufacturing of Shape Memory, Superelastic Alloys and Multifunctional Materials, MS&T 2016, Salt Lake City, Utah, October 23-27, 2016

Selected Grants

1. NSF CMMI-1538665, Collaborative Research: Multi-Hazard Resilient Design of Buildings With High Strength and Damping Capacity Shape Memory Alloys, \$146,998, September 2015 –August 2017, PI: Haluk Karaca and Osman Ozbulut,
2. KSEF, The Damping and Cyclic Behavior of NiTiHfPd High Strength Shape Memory Alloys, \$30,000, July 2015 -June 2017, PI: Haluk Karaca
3. NSF CAREER (CMMI-0954541): Engineering Meta-magnetic Shape Memory Alloys as the Future Generation of High Performance Magnetic Actuators", **\$412,000**. June 2010 -May 2016, PI: Haluk Karaca
4. NASA-EPSCoR, Shape Memory Alloys for High Temperature and Surface Morphing Applications in Aerospace Industry, **\$1,382,503** (NASA:\$747,656, KY EPSCoR: \$300,000, Cost Share: \$334,847), July 2011 -June 2015, 11.11% of academic year, Science-PI: Haluk Karaca, Science Co-PI: YT Cheng, PI: Suzanne Smith, Co-PI: Janet Lump
5. NSF, CMMI-1130381, Characterization, Design and Modeling of Novel Shape Memory Composites, **\$325,693**, September 2011 -August 2015, 5% of academic year, PI: Haluk Karaca, Co-PI: Charles Lu

Advisees

Current

Peizhen Li (PhD), Soheil Saedi (PhD), Sayed E Saghaian (PhD), Guher Toker (MS), Sheetal Kumar Dacha(MS), Ankur Majumdar(MS), Ethan Vance (B.S),

Past:

Burak Basaran (Post-doc), Hirobumi Tobe (Post-doc), Sessa Spandana Pulla (Ph.D.), Sayed M. Saghaian (Ph.D.), Ali Sadi Turabi (Ph.D.), Mohammad Souri (Ph.D.), Emre Acar (Ph.D.), Irfan Kaya (Ph.D.), Gurdish Ded (M.S.), Kae Tsong Then (B.S), Jacob Cooper (B.S.), Kameron Vance (B.S.), Anil Erol (B.S.), Ryan Schulte (B.S.), B.S Eli Darby (B.S.), Timothy Sweda (B.S.), Micah Pickerell (B.S.), Parth Parekh (H.S., B.S), Nikolay Gustenyov (B.S.), Jacob Ingram (B.S), DJ Martinez (H.S.). Charles Grigsby (H.S.), Joseph Schneider (H.S), Ryan Blood (H.S), Ryan Draper (H.S), Chris Merchak (H.S), Adam Go (H.S), Alyson Wade (H.S.)