

## Who's New

Three new Engineering and Applied Science faculty members have arrived this fall.

### Hyuck Choo

*Assistant Professor of Electrical Engineering*

Professor Choo's research focuses on micro/nanotechnology-based devices such as nanophotonics, biological and biomedical imaging, and ultrahigh-density magnetic data storage. His research with nanophotonic devices centers around focusing light to create the next generation of magnetic data storage devices. In the area of biomedical imaging, he is developing optical techniques to capture the high-resolution images of biological structures without using toxic dyes or harmful rays. Finally, he engineers optical micromechanical systems that can precisely track and characterize the neuromechanical activities of an individual insect in a swarm. The potential application of this research is in building energy-efficient, nature-optimized, self-coordinating robots.

Choo received his BS (1996) and MEng (1998) in electrical and computer engineering from Cornell University and his PhD in electrical engineering and computer sciences from University of California, Berkeley (2007). He has worked at Kionix, Inc., in Ithaca, New York, and was a Postdoctoral Fellow at the Berkeley Sensor & Actuator Center and the Lawrence Berkeley National Laboratory, where he worked on micro/nanoscale optics and surface-enhanced Raman spectroscopy. Choo is a recipient of the Sevin Rosen Funds Award for Innovation and the Lim Pre-Doctoral Prize.

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Choo



Kochmann

### Dennis Kochmann

*Assistant Professor of Aerospace*

Professor Kochmann's research combines theoretical, computational, and experimental solid mechanics to study the link between microstructure and macroscopic properties of a variety of engineering materials. One of his areas of research is the simulation of microstructures in crystalline solids (such as metals). In contrast to many current phenomenological theories, Professor Kochmann's research aims at physics-based, and hence predictive, multiscale models applicable to polycrystal plasticity and twinning. Another of his research areas is the design of novel composite materials with tunable performance, for instance, materials whose stiffness and damping can be tuned by orders of magnitude, reaching viscoelastic stiffness greater than that of a diamond. He designs these materials using a careful composite architecture and utilizing phases with so-called negative-stiffness mechanisms.

Kochmann received his Dipl.-Ing. in mechanical engineering from Ruhr-University Bochum (2006), his MS in engineering mechanics from the University of Wisconsin-Madison (2006), and his Dr.-Ing. in mechanical engineering from Ruhr-University Bochum (2009). He was a Postdoctoral Associate at the University of Wisconsin-Madison as well as a Postdoctoral Scholar at Caltech. Professor Kochmann has received a Fulbright fellowship and a Feodor-Lynen fellowship from the Alexander von Humboldt Foundation.

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### Austin Minnich

*Assistant Professor of Mechanical and Civil Engineering*

Professor Minnich researches the physics and engineering of nanoscale heat transport. Nanostructured materials have novel thermal properties with applications in energy such as for thermoelectric materials, which convert heat directly to electricity. Minnich uses experimental techniques, including ultrafast optical experiments, to study transport at the length and time scales of the energy carriers themselves. These experiments measure properties of the energy carriers that are lost at macroscopic scales, allowing for a more complete understanding of nanoscale transport physics. Minnich also uses these results to design novel materials and thermal devices, such as more efficient thermoelectric materials and devices for thermal energy storage.

Minnich received his BS in engineering science from the University of California, Berkeley (2006), and his MS (2008) and PhD (2011) degrees in mechanical engineering from the Massachusetts Institute of Technology. Minnich is the recipient of National Science Foundation and Department of Defense graduate fellowships.

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Minnich

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