

N E W F A C U L T Y

The Division welcomed *three* new faculty members to Caltech over the past few months, strengthening the Division's presence in electrical engineering, applied physics, and mechanical engineering generally, and in areas including wireless communications, optics, biomechanics, and nanofabrication more specifically.

Babak Hassibi **Assistant Professor of Electrical Engineering**

PROFESSOR HASSIBI'S RESEARCH is in communications, signal processing, and control. He is currently most interested in wireless communications, especially in the use of multiple-antenna systems, where he has studied both the information-theoretic and coding-theoretic aspects of such systems, as well as devised practical high-rate space-time transmission schemes. Other research interests include adaptive signal processing and neural networks; blind channel equalization; statistical signal processing; robust estimation and control, especially connections between robustness and adaptation; and linear algebra, with emphasis on fast algorithms, random matrices, and group representation theory.

Professor Hassibi received a BS from the University of Tehran in 1989, an MS from Stanford University in 1993, and a PhD, also from Stanford University, in 1996. Just prior to joining Caltech, he was a member of the Technical Staff at Bell Laboratories.





Oskar Painter (MS '95, PhD '01)
Assistant Professor of Applied Physics

PROFESSOR PAINTER'S RESEARCH interests are in nanofabrication, optoelectronics, quantum electronics, and optics. His current research investigates the new and interesting ways in which light can be guided and trapped by the strong electromagnetic dispersion present in high-contrast periodic materials (photonic crystals). Optical devices formed in such materials are being studied for a variety of applications ranging from next-generation planar lightwave circuits to cavity QED studies of coherent electron-photon processes.

Professor Painter received his Bachelor of Applied Science degree in Electrical Engineering in 1994 from the University of British Columbia, his MS degree from Caltech in 1995, and his PhD in Electrical Engineering from Caltech in 2001. Most recently he helped found and has been working with cQuint Communications, a start-up company focused on bringing a new fiber-optic packaging technology to the telecommunications industry.



Rob Phillips
Professor of Mechanical Engineering and Applied Physics

PROFESSOR PHILLIPS'S RESEARCH centers on the development of methods for treating multiple spatial scales simultaneously with special emphasis on linking atomistic and continuum methods. During recent years he has applied such methods to defects in solids culminating in the recent publication of *Crystals, Defects and Microstructures* (Cambridge University Press, 2001). More recently, he has been engaged in bringing similar methods to bear on problems of biological interest with special reference to the emerging field of single-molecule biomechanics. He is delighted to be at Caltech where the type of interdisciplinary research he especially favors spreads across the various divisions.

Professor Phillips received his BA in Physics from the University of Minnesota in 1986, and both his MS in Physics (1986) and PhD in Physics (1989) from Washington University. Prior to joining Caltech, he was on the faculty at Brown University, and recently completed a sabbatical at L'Institut National Polytechnique de Grenoble.