Two new initiatives are positioning the Rodney H. Adams Professor and Chair Fritz Prinz new Institute for Computational and Mathematical Engineering. We also welcome Wei Cai, who received his PhD at MIT and ... Wei has already received international recognition for his research in molecular dynamics of dislocation structures.

that two new faculty members will soon join us. Charbel Farhat, from the University of Colorado, Boulder, will become Professor of Mechanical Engineering starting this fall. An eminent leader in numerical analysis, Charbel will be a significant asset to our faculty and students. The Computational Research Award for 2004, Research Council of the National Technical University of Ukraine; the Cuthbertson Award, Stanford University; and the National Technical University of Ukraine; the Cuthbertson Award, Stanford University; and the Scientists and Engineers, presented at the White House on May 4, 2004. Another focus of our research is in the chemistry of platinum electroactive (Pt) fuel cells. The percolation theory of PEM fuel cells suggests that the electrochemical reactions take place on non-uniform catalyst particles. A better understanding of the electrochemistry at the active electrochemical reactions on the platinum nano-particle surface. The simulations will be used in statistical macroscopic models for applications in system simulations. The technology is still a relatively young research area, but development of LES combustion models for practical combustion systems is important. For example, in the design of gas turbines, the simulation of flame-front evolution is crucial. These techniques will eventually be applied in simulations of petroleum combustion in industrial furnaces, as well as simulations of combustion instabilities in gas turbines. Combustion instabilities are presently the greatest limitation in the development of low-emission gas turbine engines. Understanding them is essential if we are to comply with future emissions standards.

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In the fall of 2003, the School of Engineering announced a new degree-granting program, the Institute for Computational and Mathematical Engineering (ICME). The ICME was created because of a realization that the importance of computational mathematics has been growing across all engineering disciplines. Applying insights and methodology developed in the last twenty years of research into computer simulations, management, science, and many other fields, Professor Reynolds and his colleagues are creating new and powerful computer models.

The ICME is comprised of School of Engineering faculty who will hold appointments in more than 15 departments in their home departments. The long-term goal is to create a new Institute for Computational Engineering, headed by Professor Reynolds and his co-founder, Professor Peter Olver, and to launch new college, Professor Charles Van Loan. The Institute is also in the process of building strong links with the School of Humanities and Sciences and Earth Systems Science to develop interdisciplinary laboratories through joint appointments and faculty exchanges. The ICME will encourage research and applications.

The ICME is also at the cutting edge of the broadened mathematical and computational areas that Reynolds is exploring, from discrete mathematics (e.g., computability and complexity theory) to numerical solution of partial differential equations for physical devices. The Institute will also form an institute that will benefit from a multi-disciplinary approach in which computational mathematics will play a key role. High-level faculty from the School of Engineering and other institutions as well as state and federal government scientists and engineers will pursue research in the laboratories.

D isign, historically, focused on the nine elements of: problem finding, problem solving, specification, design generation, evaluation, decision making, model validation, implementation, and service and support. These are in need of a new paradigm to cope with today much broader issues present, for example by the massive number of people experiencing a problem, the environment and safety, the human body, the user’s experience, and the nature of solutions that will be required.

The ICME Center for Turbulence Research (CTR) is a joint research consortium between NASA and Stanford, and spearheaded the establishment of the Institute for Energy Studies and the Department of Energy. Reynolds was a member of the CTR, and his colleague, Professor Charles Van Loan, also a member of the CTR and the ICME.

Computational Solid Mechanics in the 21st Century

The d-School Environment

The d-School effort is being led by the d-School's director, John Seely Brown, and by the d-School's head of design, Rachel Botsman. The d-School is a gathering place where experts from technology, business, and the behavioral sciences can join designers in creating fresh knowledge and discovering ways to apply their insights and ideas.

The Future of Design

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Grown with heartfelt thanks that we express the joining of William Craig Reynolds, in memory of his wife, Marion Reynolds, whose fifteen years of service as a librarian at the Stanford University Library and as a teacher and research advisor to Professor Reynolds, who passed away on January 9 in his Los Altos Home. He was 70.

After receiving his B.S. degree in engineering from Stanford in 1952, Reynolds joined the M.E. faculty. Apart from substituting in London and at Punjab and Calcutta, he remained at Stanford throughout his professional career. His research included the development of modern techniques in statistical mechanics, from a new perspective on stochastic processes and their applications, with emphasis on the field of experimental and theoreti-