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The Fu Foundation School of
Engineering and Applied Science

The Department of Chemical Engineering
Columbia University

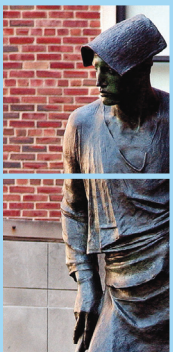
2012 Gaden Memorial Lecture

presented by

Manfred Morari

Professor, Department of Information Technology
and Electrical Engineering at

ETH Zurich

PROFESSOR MANFRED MORARI, a chemical engineer by education and training, is a highly distinguished researcher and educator in the field of automatic control. A faculty member in the Department of Information Technology and Electrical Engineering at ETH Zurich, Professor Morari served as the head from 2009 to 2011 and as the head of the Automatic Control Laboratory from 1994 to 2008. Prior to joining ETH, he was the McCollum-Corcoran Professor of Chemical Engineering and Executive Officer for Control and Dynamical Systems at the California Institute of Technology. He earned his diploma from ETH Zurich and a Ph.D. from the University of Minnesota, both in chemical engineering. His interests are in hybrid systems and the control of biomedical systems. In recognition of his research contributions, he has received numerous awards, including the Donald P. Eckman Award; the John R. Ragazzini Award and the Richard E. Bellman Control Heritage Award from the American Automatic Control Council; the Hendrik W. Bode Lecture Prize and the IEEE Control Systems Technical Field Award from IEEE Control Systems Society; the Allan P. Colburn Award and the Professional Progress Award from AIChE; the Curtis W. McGraw Research Award from ASEE; and *doctor honoris causa* from Babes-Bolyai University. He is a fellow of IEEE, IFAC, and AIChE and a member of the U. S. National Academy of Engineering. Professor Morari has held appointments with Exxon and ICI plc and serves on the technical advisory boards of several major corporations.

Abstract:
Historically, in process systems engineering control and operations were considered two separate tasks, with control concerned with feedback and dynamic aspects and operations with the optimal choice of set points and reference trajectories. This distinction has become continuously more blurred as feedback controllers are now chosen via optimization procedures or control actions are even determined directly via online optimization (model predictive control). Using both theoretical arguments and examples from a wide range of application areas, we argue that the tasks should be handled separately for reasons of complexity, reliability, and robustness.

The Department of Chemical Engineering
at Columbia University
is pleased to announce

THE SIXTH ANNUAL GADEN MEMORIAL LECTURE:

Control and Operations

presented by

Professor Manfred Morari

Automatic Control Laboratory
Department of Information Technology and Electrical Engineering
ETH Zurich

Friday, October 5, 2012
11:00 a.m.

Davis Auditorium
412 Center for Engineering and
Physical Science Research (CEPSR)
Columbia University

ELMER L. GADEN JR., widely known as the "father of biochemical engineering," received all his degrees from Columbia. Shortly after receiving his doctorate in 1949, he became a faculty member and remained at Columbia, often serving as department chair, until 1979. He was the inaugural editor of *Biotechnology and Bioengineering* (1959–1974), and retired as Willis Johnson professor from the University of Virginia in 1994. He received many awards throughout his career for scholarship, outstanding teaching, and service to the many professional organizations he served. In 2009 he was awarded the Fritz and Delores Russ Prize, one of engineering's highest honors, in delayed recognition of the profound effect of his work and leadership on the large-scale production of antibiotics following the Second World War. Professor Gaden died on March 10, 2012.

THE GADEN MEMORIAL LECTURE is an annual examination of the changing interface between chemical engineering, cognate sciences, and society.

PAST GADEN LECTURERS

George Georgiou	2007
Frank Bates	2008
Frances Arnold	2009
John H. Seinfeld	2010
Chaitan Khosla	2011