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## The Donaldson Lecture Series

On interdisciplinary topics in Chemistry, Chemical Engineering Materials Science  
and Mechanical Engineering  
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Santa Barbara, CA 93106



# Adhesion and Friction Forces in Everyday Life

April 6, 2006, 4:00 PM  
100 Smith Hall

*a reception will follow in the Dale Shephard Room of the Campus Club*

**ABSTRACT** — If there were no adhesion, we would fall apart; if there were no friction we would not move forward when we walked and no sound would come from a violin. We take these forces for granted, and make use of them instinctively, without thinking – they are part of our biological makeup. The talk will attempt to give a readily understandable but scientific background to the origin, history, and present day understanding of why things stick (adhere) to each other, why they sometimes fall apart, and the role of friction and lubrication forces in all this.

**BIO** — Jacob Israelachvili received his BA and MA in Physics from the University of Cambridge, England, and also carried out graduate and postgraduate research work there at the Surface Physics Department of the Cavendish Laboratory. He received his PhD in 1972. After a two-year European Molecular Biology Organization (EMBO) research fellowship at the University of Stockholm, he left for Australia where, from 1974 to 1986, he led an experimental research laboratory devoted to measuring the forces between surfaces. In 1982 he was elected a member of the Australian Academy of Science. In 1986 he joined the faculty of the University of California at Santa Barbara where he holds joint appointments as Professor in the Department of Chemical Engineering, the Materials Department and the Biomolecular Science and Engineering Department. He was the Associate Director of the Materials Research Laboratory at UCSB from 1993 until 2003. In 1988 he was elected a Fellow of the Royal Society of London, and in 1991 he was awarded the Alpha Chi Sigma Award for Chemical Engineering Research by the American Institute of Chemical Engineers. In 1996 he was elected a Foreign Associate of the US National Academy of Engineering. He is the author of a textbook entitled “Intermolecular and Surface Forces” (Academic Press, 2nd Edition: 1991). He was given the 2002-03 Adhesion Society’s Award for Excellence in Adhesion Science, sponsored by 3M. Most recently he was made a Fellow of the American Physical Society (2003) and was elected a member of the National Academy of Sciences in 2004.