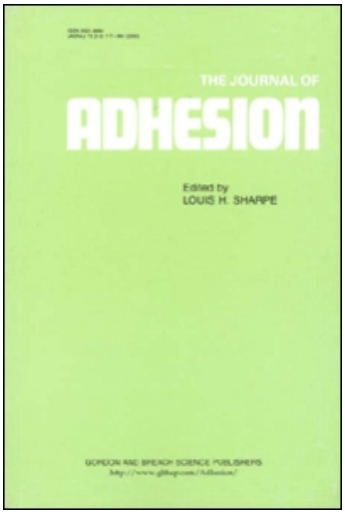

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A WORD FROM THE EDITOR

The Journal of Adhesion has for years honored the recipient of *The Adhesion Society Award for Excellence in Adhesion Science, Sponsored by 3M*, with an issue or series of issues containing a "Collection" of papers relevant to the Awardee's contributions to the science and/or technology of adhesion and/or adhesives.

The collection of papers in this issue of The Journal of Adhesion is the first in a series of issues containing papers from former students, associates, friends, and admirers of Professor Jacob Israelachvili and is meant to honor him. We hope that you will find these papers interesting and instructive.

Louis H. Sharpe
Editor in Chief

A TRIBUTE TO JACOB ISRAELACHVILI*

Professor Jacob Israelachvili was honored during the 26th Annual Meeting of The Adhesion Society, Inc., in Myrtle Beach, South Carolina, USA, 23–26 February 2003, as the recipient of *The Adhesion Society Award for Excellence in Adhesion Science, Sponsored by 3M*. This award is the Society's premier honor for outstanding achievements in scientific research relating to adhesion. The criteria for winning this award include:

1. A scientific contribution that has significantly improved our understanding of the phenomenon of adhesion, or a contribution to the technology of adhesion or adhesives that has had significant impact on the adhesion/adhesives industry.
2. Worldwide recognition of that achievement.

He received the Award "For clarifying the molecular-level processes associated with adhesion, friction and lubrication and the relationship between them."

*Adapted from the Proceedings of the 26th Annual Meeting of The Adhesion Society, Inc., with the kind permission of the Society.

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Jacob's experimental work has revolutionized our molecular scale understanding of adhesion in a wide range of systems including both hard and soft surfaces, smooth and rough surfaces, and static (or steady-state) *versus* dynamic (or transient) effects. His measurements involve the use of the Surface Forces Apparatus (SFA) that was first developed and used in David Tabor's group at the Cavendish Laboratory for measuring the forces between surfaces in air. Jacob refined and extended the SFA measurements such that today the SFA is the only technique that can simultaneously measure the contact area and deformation, the normal and lateral force, and the surface separation in contacts.

Professor Israelachvili's work has been crucial in testing and formulating basic models for the interactions between surfaces. The validity and limits of certain well-known equations or theories including the Laplace Pressure contribution of submicroscopic capillary condensed liquid bridges to the measured adhesion force, the Johnson-Kendall-Roberts (JKR) theory of adhesion/contact mechanics, and the applicability of Amonton's Law were tested. His measurements of the forces between surfaces in simple liquids clearly showed the breakdown in continuum theories and the role of solvent structure on the forces. His studies of friction between lubricated and unlubricated systems helped clarify the different types of mechanisms that can result in stick-slip sliding and established a relationship between adhesion and adhesion hysteresis. These studies have revealed the very different structure and dynamics of molecularly thin films when confined under a high load or pressure. As a result of these measurements, important new qualitative and quantitative insights have been obtained into different adhesion and tribological processes at the macroscopic, microscopic and molecular levels.