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## The Journal of Adhesion

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### Foreword

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## Foreword

### CONTROL OF ADHESION IN BIOLOGICAL ENVIRONMENTS

After a long period of incubation, a new body of adhesion science that one might call “bioadhesion” seems ready to burst from its confining shell of “vital” substance. That is, it is coming to be understood—withstanding the magic and mystery of metabolic events—that biological substances are not immune from the laws of physics and chemistry just because they are “alive.” It has been the unfortunate trend of the field of “biology of adhesion” to impute a biological specificity (lectin-receptor interactions, antigen-antibody interactions, enzyme-substrate interactions, etc.) to all binding encounters of cellular matter with various natural and even synthetic surfaces. In the case of some common microorganisms that are noted to colonize an enormously diverse substrata (such as in the human oral cavity), the need for specific surface binding sites could consume the entire surface areas of these tiny cells without even considering competing surface processes like nutrient intake and product export. Obviously, the field has reached an embarrassing impasse, where nonspecific adhesive mechanisms must be considered as potent paths for at least the initial liaisons of particulate biological matter with substrata surfaces.

It should not be surprising, then, that a growing—but scattered—biological literature now addresses such issues as substratum surface energies, hydrophilic/hydrophobic ratios, polar *versus* dispersion forces, wetting, spreading, dehydration, interfacial “conditioning films”, and boundary layer mechanics. Readers of *THE JOURNAL OF ADHESION* will find some of these fledgling attempts at legitimizing the science of “bioadhesion” to be naive and unconvincing. Nevertheless, a start has been made, and it is now time for the truly expert cadre of adhesion specialists to join this effort. Towards that end, The Adhesion Society sponsored a mini-

symposium on this topic at its 1985 meeting and with this issue of **THE JOURNAL OF ADHESION** presents a group of related "bioadhesion" papers that we hope will represent the first of a focussed, rapidly enlarging set of such contributions. Given the advent of an entirely new generation of biotechnology products, ranging from biomedical implants like the artificial heart to fixed-biofilm processors of genetically engineered molecules, an exciting challenge awaits the community of adhesion scientists.

Can we, together with our biological colleagues, better define where nonspecific adhesive interactions dominate cell-surface encounters—and come to understand, predict, and control these events more directly?

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