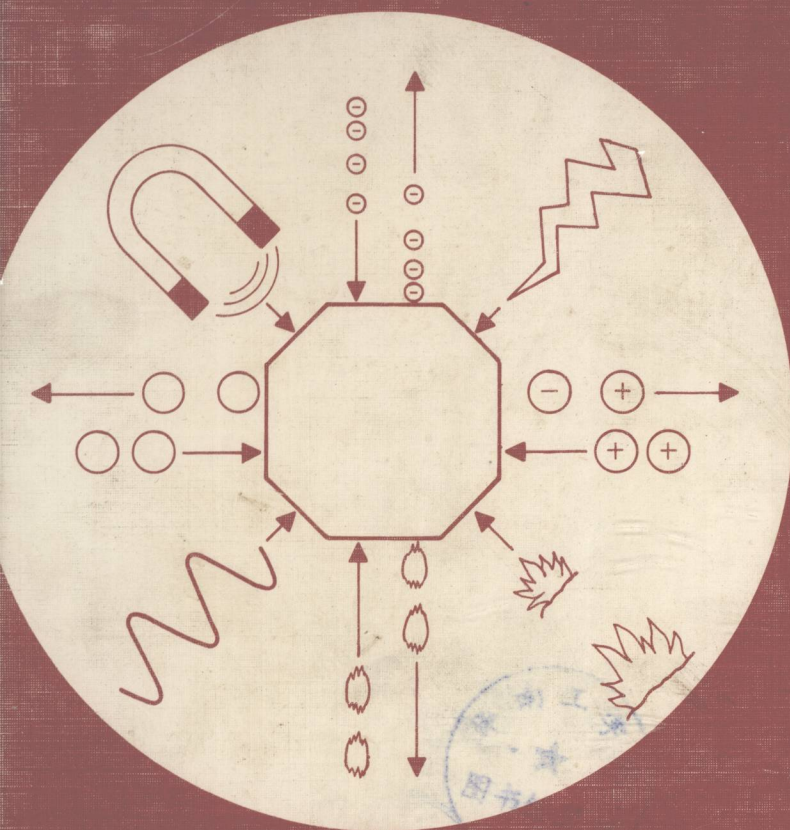


studies in surface science and catalysis



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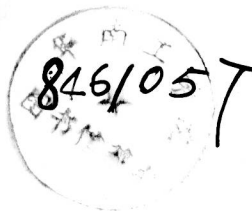
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Proceedings of the Third International Conference,
Asilomar, California, U.S.A., 1–4 September 1982

Editors

C.R. BRUNDLE and H. MORAWITZ

IBM Research, 5600 Cottle Road, San José, CA 95193, U.S.A.



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edited by **C.R. Brundle and H. Morawitz**

FOREWORD

The third International Conference on " Vibrations at Surfaces " (VAS III) was held at Asilomar, California, from September 1-4, 1982. It followed its two forerunners held in Juelich, West Germany in 1978 and Namur, Belgium in 1980 with clear indications of continuing and increasing growth in both experimental and theoretical activities, sophistication and understanding.

Almost all of the 102 papers presented at the meeting are published in this volume. A few papers appear as abstracts only due to prior commitment to other publication channels or choice of authors and/or editors.

The conference attracted about 165 participants active in the field, and was organized by a group of scientists from the IBM Research Laboratory in San Jose, California acting as local committee. The hard-working members of this group included:

D. Auerbach	F. Houle
P. Bagus	A. Luntz
J. Barker	H. Morawitz (Chairman)
I. Batra	M. Philpott
R. Brundle	J. Rabolt
T. Chuang	H. Seki
F. Herman	J. Swalen

To cover the range of work relevant to the theme of the meeting, a set of eight session topics were chosen with the help of an International Advisory Committee consisting of :

S. Anderson, Sweden	B. Lundquist, Sweden
G. Boato, Italy	D. Menzel, Germany
E. Burstein, U.S.A.	A. Otto, Germany
C. Imbert, France	J. E. Rowe, U.S.A.
H. Ibach, Germany	W. Suetaka, Japan
D. King, England	P. Toennies, Germany
J. Kirtley, U.S.A.	R. Van Duyne, U.S.A.
A. Lucas, Belgium	H. Weinberg, U.S.A.

The topics chosen for the eight sessions held over a span of 3 days were: (I) Vibrational Frequency Shifts and Widths-Lateral Interactions; (II) Dynamical Processes at Surfaces; (III) and (IV) Electron Loss Spectroscopy; (V) Raman and Surface Enhanced Raman Scattering; (VI) Infrared Absorption and Reflection Spectroscopy; (VII) Beam Surface Scattering - Surface Phonons; (VIII) Electron Tunnelling Spectroscopy - Surface Enhanced Raman Studies in Electrochemistry. In addition, C. B. Duke presented an introductory keynote surveying progress in the field since the last meeting. In the final session H. Ibach and T. Grimley presented conference overviews and future prospects for the field from an experimental and theoretical perspective.

Also included in the Proceedings are four literature surveys on Energy Loss, Inelastic Tunnelling, Infrared and Raman (SERS) papers. The ones on EELS and Infrared are updates of similar surveys appearing in the Proceedings of VAS II, the remaining two are new additions.

A striking aspect of the meeting was the presence of much work related to dynamical effects occurring in atom and molecule-surface interactions. While the static properties of both surface and adsorbate define the zero order response, it is clear that many of the techniques used and properties determined in vibrational surface spectroscopy in fact depend on dynamical changes in both surface and adsorbate behavior. Typical examples are the various enhancement mechanisms proposed in SERS, the effect of substrate phonon and electronic excitations in atom and molecule scattering experiments and the interplay of local and collective modes in overlayer vibrations to mention a few.

The conference proved the timeliness of a two year period and provided a convenient geographical locus for the Pacific sector of surface vibrational spectroscopy given the European locations of VAS I and II. The conference organizers gratefully acknowledge generous support from the IBM Research Laboratory at San Jose, the National Science Foundation, the Air Force Office of Scientific Research, The Office of Naval Research, the International Union of Pure and Applied Physics and the American Physical Society for sponsorship and financial aid. Finally, Mrs. Beth MacQuiddy as conference secretary did a superb job keeping track of the myriad of logistical details and deserves the full gratitude of the organizing committee and all participants.

C. R. Brundle and H. Morawitz
(Guest Editors)

VIBRATIONS AT SURFACES CONFERENCE
September 1-4, 1982

Registered Participants

Frank J. Adrian
Johns Hopkins University/APL
Laurel, MD 20707

Paul Alivisatos
Chemistry Department
University of California
Berkeley, CA 94720

Guy Allan
Bell Laboratories
600 Mountain Avenue
Murray Hill, NJ 07974

D. Allara
Bell Laboratories
600 Mountain Avenue
Murray Hill, NJ 07974

Brad Anton
California Institute of Technology
208-41
Pasadena, CA 91125

D. Auerbach
IBM Research Laboratory
K33/281
San Jose, CA 95193

Neil Avery
CSIRO Div. of Materials Sci.
University of Melbourne
Parkville, Victoria 3052
AUSTRALIA

Phaedon Avouris
IBM Research Center
Yorktown Heights, NY 10598

Albert G. Baca
Bldg 70A-1117
Lawrence Berkeley Laboratory
Berkeley, CA 94720

Simon R. Bare
Department I.P.I Chemistry
University of Liverpool
Merseyside L59 3BX, Liverpool
ENGLAND

John A. Barker
IBM Research Laboratory
K33/281
San Jose, CA 95193

Inder P. Batra
IBM Research Laboratory
K33/281
San Jose, CA 95193

Christopher H. Becker
SRI International
Molecular Physics Laboratory
333 Ravenswood Dr.
Menlo Park, CA 94025

Hans-Ottman Beckmann
Department of Chemistry
SUNY at Stony Brook
Stony Brook, NY 11794

Giorgio Benedek
Ist. di Fisica
V. Celoria 16
I-2-133 Milano, ITALY

Richard C. Benson
Johns Hopkins University/APL
Johns Hopkins Road
Laurel, MD 20707

Steven L. Bernasek
Department of Chemistry
Princeton University
Princeton, NJ 08544

J. Black
17 Valerie
L1T 3G3 St. Catharines
CANADA

C. Richard Brundle
IBM Research Laboratory
K33/281
San Jose, CA 95193

Donald Burgess
Department of Chemistry
Northwestern University
Evanston, IL 60201

Elias Burstein
Physics Department
University of Pennsylvania
Philadelphia, PA 19104

Alan Campion
Department of Chemistry
University of Texas
Austin, TX 78712

M. Casassa
California Institute of Technology
127-72
Pasadena, CA 91125

Richard Cavanagh
B-268 Physics
National Bureau of Standards
Washington, DC 20234

Francis Celii
California Institute of Technology
127-72
Pasadena, CA 91125

Yves J. Chabal
Bell Laboratories
600 Mountain Avenue, MH2D-318
Murray Hill, NJ 07974

M. A. Chesters
School of Chemical Sciences
University of East Anglia
Norwich NR4 7TJ
UNITED KINGDOM

Shirley Chiang
Department of Physics
University of California
Berkeley, CA 94720

Chih-Cong Chou
Department of Chemistry
University of California
Irvine, CA 92717

Tung J. Chuang
IBM Research Laboratory
K33/281
San Jose, CA 95193

P. Anthony Cox
Inorganic Chemistry Laboratory
South Parks Road
Oxford OX1 3QR, ENGLAND

Jon B. Cross
Los Alamos National Laboratory
CNC-2, MS 732
Los Alamos, NM 87545

John E. Crowell
Department of Chemistry
University of California
Berkeley, CA 94720

B. M. Davies
Department of Chemistry
University of Texas
Austin, TX 78712

J. E. Demuth
IBM Research Center
Yorktown Heights, NY 10598

F. W. DeWette
Department of Physics
University of Texas
Austin, TX 78712

R. E. Dietz
Bell Laboratories
600 Mountain Avenue
Murray Hill, NJ 07974

Rolf Dornhaus
Kruppstr. 6
D-5100 Aachen 1
WEST GERMANY

Lawrence H. Dubois
Bell Laboratories
600 Mountain Avenue, 1A-280
Murray Hill, NJ 07974

Charles Duke
Xerox Webster Research Ctr.
Bldg. 114
Rochester, NY 14644

Hardouin Duparc
c/o A. A. Maradudin
Department of Physics
University of California
Irvine, CA 92717

Gary L. Eesley
Physics Department
GM Research Laboratory
Warren, MI 48090

Adolfo G. Eguluz
Department of Physics
University of California
Irvine, CA 92717

Thomas Engel
Department of Chemistry
University of Washington
Seattle, WA 98195

Wulf Erley
KFA/IGV
5270 Juelich
WEST GERMANY

James L. Erskine
Department of Physics
University of Texas
Austin, TX 78712

Galen Fisher
Physical Chemistry Department
General Motors
Warren, MI 48090

John Freeman
Monsanto Company
800 N. Lindberg
St. Louis, MO 67166

J. W. Gadzuk
National Bureau of Standards
Washington, DC 20234

Nicolas Garcia
IBM Research Laboratory
K33/281
San Jose, CA 95193

S. Gauthier
Groupe de Physique des
solides de l'E.N.S.
Tour 23, 2 place Jussieu
75251 Paris, FRANCE

Steven George
Department of Chemistry
419 Latimer Hall
University of California
Berkeley, CA 94720

Nathaniel E. Glass
Department of Physics
University of California
Irvine, CA 92717

W. A. Goddard III
Department of Chemistry
California Institute of Technology
Pasadena, CA 91125

William Golden
IBM A62/44
San Jose, CA 95193

Gary Goncher
Chemistry Department
University of California
Berkeley, CA 94720

Wolfgang Gopel
Physics Department
Montana State University
Bozeman, MT 59717

Joseph G. Gordon
IBM Research Laboratory
K33/281
San Jose, CA 95193

Robert Greenler
Department of Physics
University of Wisconsin
Milwaukee, WI 53201

T. B. Grimley
Donnan Laboratories
University of Liverpool
P. O. Box 147
Liverpool L69 3BX
UNITED KINGDOM

Paul Hansma
Department of Physics
University of California
Santa Barbara, CA 93106

Bryan Hayden
Fritz-Haber-Institut
Faradayweg 416
1 Berlin 33
WEST GERMANY

Joachim Heidberg
Institut Physik. Chemie
D-3000 Hannover
WEST GERMANY

John C. Hemminger
Department of Chemistry
University of California
Irvine, CA 92717

David Heskett
Department of Physics
University of Pennsylvania
Philadelphia, PA 19104

K. W. Hipps
Department of Chemistry
Washington State University
Pullman, WA 99164

Friedrich Hoffmann
Exxon Corp. 16-A029
Linden, NJ 07036

Bill Hopewell
IBM San Jose
A57/044
San Jose, CA 95193

Frances A. Houle
IBM Research Laboratory
K33/281
San Jose, CA 95193

Heinrich E. Hunziker
IBM Research Laboratory
K34/281
San Jose, CA 95193

Jerry E. Hurst Jr.
Department of Chemistry
Stanford University
Stanford, CA 94305

Ingo Hussla
Inst. Phys. Chemie A
Collinstr. 3-3a
3000 Hannover
WEST GERMANY

Jeffrey Hylden
Department of Chemistry
University of Minnesota
Minneapolis, MN 55414

Harald Ibach
KFA Julich IGB
D517 Julich
WEST GERMANY

Rolf P. Jaeger
2830 Malabar Dr.
Santa Clara, CA 95051

Kenneth C. Janda
California Institute of Technology
127-72
Pasadena, CA 91125

L. L. Kesmodel
Physics Department
Indiana University
Bloomington, IN 47405

David King
Physical Chemistry Department
University of Liverpool
Liverpool
UNITED KINGDOM

G. Kirczenow
Physics Department
Boston University
Boston, MA 02215

John Kirtley
IBM Research Center
Yorktown Heights, NY 10598

Richard Knochenmuss
Chemistry Department
Washington State University
Pullman, WA 99164

Bruce E. Koel
Department of Chemistry
University of California
Berkeley, CA 94720

M. L. Koszykowski
Sandia National Laboratories
Livermore, CA 94550

Glenn D. Kubiak
Department of Chemistry
Stanford University
Stanford, CA 94305

Keiji Kunimatsu
Research Inst. Catalysis
Hokkaido University
Sapporo 060, JAPAN

David K. Lambert
Physics Department
GM Research Laboratory
Warren, MI 48040

C. R. Leavens
244-2270 Cotter's Cres.
Ottawa, Ontario
CANADA K1V 8Y6

Ingolf Lindau
SLAC, Bin #69
Stanford University
Stanford, CA 94305

B. H. Loo
Materials Research Laboratory
SRI International
Menlo Park, CA 94025

John J. Low
Noyes Laboratory (127-72)
California Institute of Technology
Pasadena, CA 91125

Alan Luntz
IBM Research Laboratory
K34/281
San Jose, CA 95193

Lahmer Lynds
United Technologies Research
East Hartford, CT 06108

Beth Mac Quiddy
IBM Research Laboratory
K31/281
San Jose, CA 95193

Robert J. Madix
Chemical Engineering Department
Stanford University
Stanford, CA 94305

Ursula Mazur
Department of Chemistry
Washington State University
Pullman, WA 99164

Michael R. McClellan
P. O. Box 969
Livermore, CA 94550

Gary McClelland
Chemistry Department
Harvard University
Cambridge, MA 02138

David R. Miller
Department A.M.E.S., B-010
University of California
La Jolla, CA 92093

D. L. Mills
Department of Physics
University of California
Irvine, CA 92717

Hans Morawitz
IBM Research Laboratory
K33/281
San Jose, CA 95193

Cherry Murray
Bell Laboratories
600 Mountain Avenue, 1E-343
Murray Hill, NJ 07974

Lee Myers
Office of Naval Research
Washington, DC 20332

Ron Naaman
Weizmann Institute
Isotopes Research Department
Rehovot, ISRAEL

Mourits Nielsen
Atomic Energy Commission
Research Establishment Riso
DK-4000 Roskilde, DENMARK

Mitsuaki Nishijima
Department of Chemistry
Faculty of Science
Kyoto University
Kyoto, JAPAN

Abraham Nitzan
Department of Chemistry
Northwestern University
Evanston, IL 60201

Fabrizio Nizzoli
Istituto di Fisica Universita
Modena, ITALY 41100

Curt Nyberg
Department of Physics
Chalmers University of Technology
S-412 96 Goteborg
SWEDEN

Andreas Otto
Physikalisches Institut III
Universitat Dusseldorf
4000 Dusseldorf
WEST GERMANY

John Overend
Department of Chemistry
University of Minnesota
107 Pleasant St. SE
Minneapolis, MN 55455

J. F. Owen
Yale University
P. O. Box 2157, Yale Station
New Haven, CT 06520

Craig Parsons
Chemistry Department
University of California
Berkeley, CA 94720

B. N. Persson
KFA Julich
D-5170 Julich
WEST GERMANY

M. Persson
Institute of Theoretical Physics
Goteborg S-41296
SWEDEN

Bruno Pettinger
Fritz Haber Institute M76
Faradayweg 4-6
1000 Berlin
WEST GERMANY

Herbert Pfnuer
IBM Research Laboratory
K33/281
San Jose, CA 95193

M. R. Philpott
IBM Research Laboratory
K33/281
San Jose, CA 95193

Jean-Jacques Pireaux
F.N.D.P.
61, rue de Bruxelles
5000 Namur, BELGIUM

Iven Pockrand
Physikalisches Institut III
Universitätsstr. 1
D-400 Dusseldorf 1
WEST GERMANY

John F. Rabolt
IBM Research Laboratory
K42/282
San Jose, CA 95193

Heinz Raether
Universitaet Hamburg
Inst. fur Angewandte Physik
Jungiusstrasse 11
2 Hamburg 36, WEST GERMANY

Talat S. Rahman
1829 Santa Ana Ave.
Costa Mesa, CA 92627

Paul L. Richards
Department of Physics
University of California
Berkeley, CA 94720

Arthur Robinson
Science Magazine
1515 Massachusetts Ave. N.W.
Washington, DC 20005

Joel W. Russell
Department of Chemistry
Oakland University
Rochester, MI 48063

Roger Ryberg
Physics Department
Chalmers University of Technology
S-412 96 Gothenburg, SWEDEN

David Saperstein
IBM A62/44
San Jose, CA 95193

Allen Sault
118 Mirrielees
Stanford, CA 94305

Roberta P. Saxon
SRI International
333 Ravenswood Avenue
Menlo Park, CA 94025

Kerin Scanlon
Chemistry Department
207 Pleasant SE
University of Minnesota
Minneapolis, MN 55455

Juergen Schaefer
Physics Department
Montana State University
Bozeman, MT 59717

George Schatz
Department of Chemistry
Northwestern University
Evanston, IL 60201

Zack Schlesinger
Bell Laboratories
600 Mountain Avenue
Murray Hill, NJ 07974

D. Schmeisser
Fritz-Haber Institut
Faradayweg 4-6
1000 Berlin - West
WEST GERMANY

K. Schoenhammer
I. Institut fuer
Theoretical Physik
Universitaet Hamburg
D-2000 Hamburg
WEST GERMANY

Hajime Seki
IBM Research Laboratory
K33/281
San Jose, CA 95193

Gary Selwyn
IBM Research Laboratory
K33/281
San Jose, CA 95193

Mark Severson
Department of Chemistry
University of Minnesota
Minneapolis, MN 55455

N. Sheppard
School of Chemical Sciences
University
Norwich, Norfolk NR4 7TJ
ENGLAND

Steven J. Sibener
James Franck Institute
University of Chicago
5640 S. Ellis Ave.
Chicago, IL 60637

David M. Silver
Johns Hopkins University
Applied Physics Laboratory
Laurel, MD 20707

Paul Stevens
3353 Alma St., #139
Palo Alto, CA 94306

James P. Stone
Center for Laser Studies
University of Southern California
Los Angeles, CA 90082-1112

Roger L. Strong
E203 Colorado Apts.
Lake Austin Blvd.
Austin, TX 78703

Eric Stuve
Department of Chem. Eng.
Stanford University
Stanford, CA 94305

Wataru Suetaka
Fac. Eng.
Tohoku University
Sendai, JAPAN

Jerome D. Swalen
IBM Research Laboratory
K32/281
San Jose, CA 95193

Noriko Tani
Department of Chemistry
Kwansei Gakuin University
Nishinomiya 662, JAPAN

C. G. Tengstal
Department of Physics
Chalmers University of Technology
S-41296 Goteborg
SWEDEN

Patricia Thiel
Sandia National Laboratories
Livermore, CA 94550

Paul A. Thiry
F.N.D.P.
61, rue de Bruxelles
5000 Namur, BELGIUM

Roger G. Tobin
Department of Physics
University of California
Berkeley, CA 94720

Brian Toby
California Institute of Technology
206-41
Pasadena, CA 91125

Frank Trager
IBM Research Laboratory
K33/281
San Jose, CA 95193

Hiromu Ueba
Department of Electronics
Toyama University
Takaoka, Toyama, JAPAN

S. Ushioda
Department of Physics
University of California
Irvine, CA 92717

R. Viswanathan
Department of Chemistry
Northwestern University
Evanston, IL 60201

H. Weinberg
California Institute of Technology
206-41
Pasadena, CA 91125

Eric Weitz
Department of Chemistry
Northwestern University
Evanston, IL 60201

Eugene Wells
Physical Review Letters
Ridge, NY 11961

John F. Wendelken
P. O. Box X, ORNL Bldg. 3025
Oak Ridge, TN 37830

Charles Wong
IBM Corp. 34A/006
5600 Cottle Road
San Jose, CA 95193

Haruka Yamada
Department of Chemistry
Kwansei Gakuin University
Nishinomiya 662, JAPAN

Chien-fan Yu
The James Franck Institute
The University of Chicago
5375 S. Ellis Ave.
Chicago, IL 60637

Vibrations at Surfaces

**Proceedings of the Third International Conference,
Asilomar, California, U.S.A., 1—4 September 1982**

Part A

Edited by

C.R. BRUNDLE and H. MORAWITZ

IBM Research, 5600 Cottle Road, San José, CA 95193, U.S.A.

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Asilomar, California, U.S.A., 1-4 September 1982

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