PUB-349 c.1

7th LBL/MMRD International
Materials Symposium

17th University
Conference on Ceramics

Surfaces and Interfaces in Ceramic and Ceramic-Metal Systems

JULY 28-AUGUST 1, 1980

PROGRAM & FINAL REGISTRATION FORMS

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Department of Materials Science and
Mineral Engineering, College of Engineering

Materials and Molecular Research Division
Lawrence Berkeley Laboratory

University of California
Berkeley, California

PUB-349 c.1

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PURPOSE

The emphasis of the Symposium will be on interfaces that include one ceramic (non-metallic inorganic) phase, either glassy or crystalline, i.e., glass/metal, metal/ceramic and ceramic/ceramic.

The objective of the Symposium will be to explore and assess the current fundamental understanding of the nature of the interfaces in relation to surfaces, and the capability of evaluating interfaces with respect to specific characteristics.

A parallel objective will be to correlate features of the character of the interfaces with their mechanical behavior.

Because the submission of papers has been so tremendous, the Symposium has been extended from the original three days to five, July 28-August 1. The Preliminary Symposium Program follows.

PRELIMINARY SYMPOSIUM PROGRAM

Monday, July 28, 1980

A. **Calculations of Interface/Surface States**

1. Pseudopotential Calculations for Ideal Interfaces
   M. L. Cohen, *University of California at Berkeley.*
2. On the Structure and Energy of Surfaces and Grain Boundaries in Transition Metal Oxides
   D. Wolf, *Argonne National Laboratory, Argonne, Illinois.*
3. The Nature and Role of Surface Charges in Ceramics
   Z. A. Munir, *University of California at Davis,* and J. P. Hirth, *Ohio State University, Columbus, Ohio.*

B. **Characterization of Surfaces and Interfaces**

4. Use of Photoemission and Synchroton Radiation for Studies of Surfaces and Interfaces
   W. E. Spicer, *Stanford University, Stanford, California.*
5. Physical and Chemical Characterization of Interfaces by Electron Optical Methods
   G. Thomas, R. Gronsky, O. Krivanek and R. K. Mishra, *University of California at Berkeley.*

C. **Thermodynamics of Surfaces**

6. Chemical Aspects of Segregation to Interfaces
   P. Wynblatt and R. C. McCune, *Ford Motor Company, Dearborn, Michigan.*
7. Interfaces Between Metals and Ceramics
   J. T. Klomp and P. J. Vrugt, *Philips Research Laboratories, Eindhoven, Netherlands.*
8. Interfacial Energetics in Metal-Metal, Metal-Ceramic, Metal-Semiconductor, and Related Solid-Solid and Liquid-Liquid Systems
   L. E. Murr, *New Mexico Institute of Mining and Technology, Socorro, New Mexico.*

9. Prevision of Solid-Liquid Interfacial Tensions, Structure and Adsorption in Binary Metallic Systems by Means of a Statistical Thermodynamic Model
   A. Passerone, R. Sangiorgi, *Centro Studi di Chimica Fisica Applicata del C.N.R., Genova, Italy,* and N. Eustathopoulos, *Laboratoire de Thermodynamique et Physico-Chimie Metallurgigues ass. an C.N.R.S., Saint Martin d'Heres, France.*

D. **Influence of Surfaces and Interfaces on Selected Ceramic Processes**

10. Adsorption of Dispersants from Non-Aqueous Solutions
    E. S. Tormey, L. M. Robinson, W. R. Cannon, A. Bleier and H. K. Bowen, *Massachusetts Institute of Technology, Cambridge,* Massachusetts.
11. Oxide-Aqueous Media Interfaces and Dissolution Kinetics
    D. W. Readey, *Ohio State University, Columbus, Ohio.*
12. The Reaction Interface in Reduction
    L. DeJonghe and M. Chang, *University of California at Berkeley.*
13. Development of Interfaces in In Situ Reacted Mullite-Zirconia Composites
    N. Claussen, J. S. Wallace, M. Ruhle and G. Petzow, *Max-Planck-Institute für Metallforschung, Stuttgart, West Germany.*
14. Interfacially Controlled Crystallographic Phenomena in the System K_2CO_3-$KAlO_2$
    L. P. Cook, *National Bureau of Standards, Washington, D.C.*

Wine and Cheese Party

Tuesday, July 29, 1980

E. **Grain Boundaries**

a. Structure of Boundaries

15. Use of TEM to Characterize Grain Boundaries
    A. H. Heuer, *Case Western Reserve University, Cleveland, Ohio.*
16. Microstructure and Chemical Composition of Grain Boundaries
    M. Ruhle and G. Petzow, *Max-Planck-Institut für Metallforschung, Stuttgart, West Germany.*
17. AEM and STEM Investigation of Grain Boundary Segregation in Transition Metal Oxides
    B. Bender, D. B. Williams and M. Notis, *Lehigh University, Bethlehem, Pennsylvania.*
18. Observation on Grain Boundary Structures in Nickel Oxide
    K. Y. Liou and N. L. Peterson, *Argonne National Laboratory, Argonne, Illinois.*
19. Amorphous Grain Boundary Phases in Ferroelectric (PZT) and Ferrimagnetic ($(MnZn)Fe_2O_4$) Ceramics
    R. K. Mishra, E. Goo and G. Thomas, *University of California at Berkeley.*
20. Surface and Interfacial Characterization of Tailored Ceramic Nuclear Waste Forms
    A. B. Harker, D. R. Clarke, C. M. Jantzen, P.E.D. Morgan and R. R. Neurgaonkar, *Rockwell International Science Center, Thousand Oaks, California.*

b. Boundary Migration

21. Diffusion in Migrating Boundaries
    J. E. Blendell, W. A. Kaysser and G. Petzow, *Max-Planck-Institut für Metallforschung, Stuttgart, West Germany.*
22. Grain Boundary Migration in LiF
    A. M. Glaeser, H. K. Bowen and R. M. Cannon, *Massachusetts Institute of Technology, Cambridge, Massachusetts.*

c. Effect on Deformation

23. Effect of Grain Boundaries on the Non-Linearity of Creep in Ceramics
    J. Porter, A. S. Rana, W. Blumenthal, C. H. Hsueh and A. G. Evans, *University of California at Berkeley.*
24. Role of Interfacial Defect Creation-Annihilation Processes at Grain Boundaries on the Diffusional Creep of Polycrystalline Alumina
    Y. Ikuma and R. S. Gordon, *University of Utah, Salt Lake City, Utah.*
25. Influence of Grain Boundaries on Creep of KBr
    P. Yavari and T. G. Langdon, *University of Southern California, Los Angeles, California.*
26. Microstructural Aspects of Creep Deformation in Two-Phase Ceramics
    D. R. Clarke, *Rockwell International Science Center, Thousand Oaks, California.*
27. Redistribution of Stresses During Creep Bending of Grain Boundary Sliding Materials
    J. R. Dryden, *Whiteshell Nuclear Research Establishment, Pinawa, Manitoba,* and D. F. Watt, *University of Windsor, Canada.*

d. Grain Boundary Effects on Fracture

28. Influence of Grain Boundary Silica Impurity on Alumina Toughness
    J. S. Moya, *Instituto de Ceremica y Vidrio, Madrid, Spain,* W. M. Kriven and J. A. Pask, *University of California at Berkeley.*
29. Observations and Analysis of the Stability and Nature of Propagation of Microcracks in Brittle Materials
    K. Niihara, J. P. Singh, L. D. Bentsen and D.P.H. Hasselman, *Virginia Polytechnic Institute and State University, Blacksburg, Virginia.*
30. Microcracking at Grain Boundaries
    Y. Fu, A. S. Rana and A. G. Evans, *University of California at Berkeley.*

e. Effect on Some Other Properties

31. Improved Electrical Characterization of Ceramic Oxides: Bulk vs. Interface Effects
    T. Stratton, D. Button, A. McHale, D. Reed and H. L. Tuller, *Massachusetts Institute of Technology, Cambridge, Massachusetts.*

32. Microstructural and Interfacial Effects on the Heat Conduction of Silicon Nitrides
    G. Ziegler, *DFVLR, Cologne, West Germany*, L. D. Bentsen and D.P.H. Hasselman, *Virginia Polytechnic Institute and State University, Blacksburg, Virginia.*

Reception and Banquet

Wednesday, July 30, 1980

F. **Si-SiO_2 Symposium**

33. The Si-SiO_2 Interface: Current Understanding of Chemical and Electronic Defects
    Dennis W. Hess, *University of California at Berkeley.*
34. Electron Spectroscopy Studies of the Si-SiO_2 Interface
    C. R. Helms, *Stanford University, Stanford, California.*
35. Structure of Si-SiO_2 Interfaces Determined by High Resolution Electron Microscopy
    O. L. Krivanek, *University of California at Berkeley.*
36. A model for the Formation of the Si-SiO_2 Interface
    J. P. Hirth, *Ohio State University, Columbus, Ohio.*
37. Chlorine Incorporation and Phase Separation at the SiO_2/Si Interface during Thermal Oxidation of Silicon in Cl/O_2 Atmospheres
    M. D. Monkowski, J. Monkowski, R. E. Tressler and J. Stach, *Pennsylvania State University, University Park, Pennsylvania.*
38. Stability Studies of the Chlorine-Containing Phase at the SiO_2/Si Interface Produced by HCl/O_2 Oxidation of Silicon
    S. R. Butler, F. J. Feigl, S. A. Titcomb, H. Tsai, *Lehigh University, Bethlehem, Pennsylvania*, and K. H. Jones and H. W. Kraner, *Brookhaven National Laboratory, Upton, Long Island, New York.*

G. **Interfacial Phenomena**

39. Ceramic, Glass and Metal Interfacial Problems in Ceramic Chip Capacitors
    M. J. Cozzolino and G. J. Ewell, *Hughes Aircraft Company, Culver City, California.*
40. Ceramic-Metal Interfaces in Barium-Bismuth Titanate Multilayer Ceramics
    B. S. Rawal, *AVX Ceramics Corporation, Myrtle Beach, South Carolina.*
41. Interfacial Phenomena in the Chemical Vapor Deposition of Ceramic Thin Films
    Robert F. Davis, *North Carolina State University, Raleigh, North Carolina.*

Afternoon and Evening Free.

Thursday, July 31, 1980

H. **Formation of Interfaces**

42. Wetting, Spreading and Reactions at Liquid/Solid Interfaces
    J. A. Pask and A. Tomsia, *University of California at Berkeley.*

43. Interfacial Phenomena Between Molten Metals and Sapphire Substrates in $P(O_2)$
    A. C. D. Chaklader, W. W. Gill and S. P. Mehrotra, *University of British Columbia, Vancouver, Canada.*
44. Wetting of Al_2O_3-Cr_2O_3 Solid Solutions by Molten Copper and Iron
    K. Aratani and Y. Tamai, *Kawasaki Steel Corporation, Chiba, Japan.*
45. Effect of Oxygen Partial Pressure on Wetting of SiC, AlN and Si_3N_4 by Si and a Method for Calculating the Surface Energies Involved
    M. W. Barsoum and P. D. Ownby, *University of Missouri, Rolla-Rolla, Missouri.*
46. Spreading and Reactions of Molten Metals on and with Cemented Carbides
    K. Yajima, K. Harano and T. Yamaguchi, *Kaio University, Yokohama, Japan.*
47. Influence of Oxygen Partial Pressure on Wettability of Silica by Molten Silver Alloys
    A. Passerone, R. Sangiorgi and R. Minisini, *Centro Studi di Chimica Fisica Applicata, Genova, Italy.*

I. **Development of Adhesion**

48. Role of Nickel in Porcelain Enamelling
    D. White and M. A. Salamah, *University of Leeds, Leeds, England.*
49. Use of A Flame-Sprayed Undercoat to Improve the Adherence of SiO_2-Al_2O_3 Dental Ceramics on Ni-Cr and Co-Cr Alloy
    P. Klimonda, O. Lingstuyl, B. Lavelle and F. Dabosi, *Laboratoire de Metallurgic Physique de 1' E.N.S.C.T., Toulouse, France.*
50. Alumina Scale Adherence to CoCrAl Alloys and Coatings
    D. P. Whittle and D. H. Boone, *University of California at Berkeley.*
51. Transient Liquid Phase Bonding of Silicon Nitride Ceramics
    R. E. Loehman, *SRI International, Menlo Park, California.*

J. **Reactions at Interfaces**

52. A Study of Solid State Metal/Ceramic Reactions
    R. L. Mehan and M. R. Jackson, *General Electric Company, Schenectady, New York.*
53. High Temperature Metallizing of Alumina
    M. E. Twentyman and P. Hancock, *British Ceramic Research Association, Stoke-on-Trent, England.*
54. Solid State Metal-Ceramic Reaction Bonding
    F. P. Bailey and W. Borbridge, *C.S.I.R.O., Clayton, Victoria, Australia.*
55. Reaction of ZnO on Polished Sapphire Surfaces
    M. Koumura, M. Hashiba, E. Miura, Y. Nurishi and T. Hibino, *Gifu University, Gifu, Japan.*
56. Electrochemical Oxidation and Dissolution of Single Crystals UO_2 Surfaces
    R. Wang, *Battelle, Pacific Northwest Laboratory, Richland, Washington.*

57. Interaction of Molten Silicon with Silicon Metal Oxynitride Solid Solutions
    R. R. Wills and I. Sekercioglu, *Battelle, Columbus Laboratory, Columbus, Ohio.*
58. Reactions at Alkali Metal-Glass Interfaces
    M. Barsoum, M. Velez, H. L. Tuller and D. R. Uhlman, *Massachusetts Institute of Technology, Cambridge, Massachusetts.*
59. Effect of Thermal History on the Structure of Chemically and Vapor-Deposited Silver Films on Glass
    J. E. Shelby, J. Vitko, Jr., and M. C. Nichols, *Sandia Laboratories, Livermore, California.*
60. Barium Silicate Glass/Inconel X-750 Interaction
    P. V. Kelsey, W. T. Siegel and D. V. Miley, *EG&G Idaho, Inc. and Idaho National Engineering Laboratory, Idaho Falls, Idaho.*

Evening Free.

Friday, August 1, 1980

K. **Mechanical Properties**

a. Fracture Resistance of Interfaces

61. Fracture at Interfaces as a Measure of Adherence
    S. S. Chiang, D. Marshall and A. G. Evans, *University of California at Berkeley.*
62. Measurement of Adhesion Using A Fracture Mechanics Approach
    R. McPherson, *Monash University, Clayton, Victoria, Australia.*
63. Microstructure and Mechanical Properties of Metal-to-Ceramic and Ceramic-to-Ceramic Joints
    G. Elssner, W. Diehm and J. S. Wallace, *Max-Planck-Institut für Metallforschung, Stuttgart, West Germany.*
64. Work of Adhesion Measurements by a Periodic Cracking Technique
    A. Davutoglu and I. A. Aksay, *Middle East Technical University, Ankara, Turkey.*
65. Measurement of Thick Film Adhesion by an Impact Separation Technique
    W. E. Snowden, *Lawrence Livermore Laboratory, University of California, Livermore, California,* and I. A. Aksay, *Middle East Technical University, Ankara, Turkey.*
66. Mechanical Behavior of Glass in Glass/Metal or Glass/Ceramic Systems
    S. M. Rekhson, *General Electric Company, Cleveland, Ohio.*

b. Surface Energy Effects

67. Long Term Strength of Glass Reinforced Plastics in Wet Environments
    J. Aveston, *NPL, Teddington,* and A. Kelly, *University of Surrey, Guildford, England.*
68. Influence of Hydrogen on Microcracking of Quartz Crystals
    J. Flicstein, *Universite de Limoges, Limoges, France.*

Surfaces and Interfaces in Ceramic and Ceramic-Metal Systems

JULY 28-AUGUST 1, 1980

MUST BE RECEIVED
BY JULY 9, 1980

(PRINT OR TYPE — Do not return this card without appropriate fees)

Surname/Family Name First Name Middle Initial

Mailing Address

City State ZIP Code Country

( ) _____
Telephone Number

Affiliation

Handicap or dietary restrictions: _____

☐ Spouse or guest will accompany:

(Name: _____)

☐ Spouse or guest will attend wine and cheese party on July 28, 1980.

☐ Spouse or guest will attend banquet on July 29, 1980.

Name as it should appear on name badge

!! IMPORTANT !!
Please insert requested information on reverse side

REGISTRATION APPLICATION

REGISTRATION FEE

I. Conference Registration

(includes attendance at sessions, abstracts, Proceedings, wine and cheese party, banquet, refreshment breaks) .. _____ (No.) @ $120.00 $ _____

Spouse/guest wine and cheese party ticket ..... _____ (No.) @ $ 7.00 $ _____

Spouse/guest banquet ticket ..... _____ (No.) @ $ 25.00 $ _____

II. Residence Hall Housing

(nights of July 27 through August 1)

☐ Single accommodation @ $120.00 per person* ..... $ _____
(Single accommodations are limited in number)

☐ Double accommodation @ $90.00 per person ..... $ _____

Share with: _____
(full name)

TOTAL REMITTANCE (Payable in U.S. Dollars ONLY) ... $ _____

MAKE CHECKS PAYABLE TO
THE REGENTS, UNIVERSITY OF CALIFORNIA.

Send check and form to:

Peggy Little
Conference Coordinator
Building 930, Room 335
Lawrence Berkeley Laboratory
University of California
Berkeley, California 94720
(415) 486-6388. FTS: 451-6388

*Every effort will be made to honor your housing request. Final room assignment will be on a space-available basis only.

DURANT HOTEL RESERVATION REQUEST

SURFACES AND INTERFACES IN CERAMIC AND CERAMIC-METAL SYSTEMS

July 27 - August 1, 1980

The Hotel Durant has set aside a block of rooms for this conference. *To obtain a reservation, please contact the Hotel directly:*

Hotel Durant
2600 Durant Avenue
Berkeley, CA 94704 (415) 845-8981

Requests must be received prior to *July 11, 1980,* the deadline for making reservations. *All requests must be accompanied by a deposit of $30.00.* Rooms are available at the following rates:

Single rooms with private bath or shower:
$27.00*, 28.50, 30.00, 31.50, and 34.00*

Rooms with 1 double bed and private bath or shower for 2 persons:
$31.00*, 32.50, 34.00*

Rooms with twin beds and bath for 2 persons:
$31.00*, 32.50, 35.00, 37.00, 39.50*

All of the above rates are plus the City of Berkeley Room Tax at 10%.

There are a limited number of rooms in the categories marked. Persons requesting such rooms after they have been assigned will be given the next closest rate when available.

Overnight parking: In the garage $2.00, on the parking lot $1.50. *(over)*

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 7994 OAKLAND, CA

POSTAGE WILL BE PAID BY ADDRESSEE

The Claremont Hotel

P.O. BOX 23363
OAKLAND, CALIFORNIA 94623

Please reserve the following space for me:

☐ Single room with private bath or shower @_____per night

☐ Room with 1 double bed and private bath or shower @_____per night

☐ Room with twin beds and bath for 2 persons@_____per night

I intend to share this room with _____ (name)

I plan to arrive on _____ at _____ a.m. _____p.m.

I plan to depart on _____(check-out time is 2:00 p.m.)

Enclosed please find my deposit in the amount of $_____.

Name _____

Address _____

City and State _____ZIP_____

Upon receipt of your reservation request, the Hotel will send you current information regarding ground transportation to and from the two Bay Area Airports.

NOTE: DEADLINE FOR THE MAKING OF RESERVATIONS IS JULY 11, 1980.

(Cut) *(over)*

OFFICIAL RESERVATION CARD

SURFACES AND INTERFACES IN CERAMIC AND CERAMIC-METAL SYSTEMS

July 27 - August 1, 1980

NAME _____

FIRM/GROUP _____

STREET ADDRESS _____

CITY/STATE _____ ZIP CODE _____

Reservations must be received at Hotel by July 11, 1980

Circle rate desired. If room is not available at rate requested reservation will be made at nearest available rate. Singles are 1 person per room; doubles are 2 people - 1 bed per room; double/doubles or twins are 2 people - 2 beds per room. Suites available on request. Rollaway charge $8.00. Children under 12 free sharing same accommodations as parents.

SCHEDULE OF RATES	No. of Rooms	No. of Persons
$46/night, single or double occupancy		

WILL ARRIVE ON _____ (Date) TIME _____ WILL DEPART _____ (Date)

AIRLINE/FLT. NO. _____ WILL REQUIRE AIRPORT PICKUP _____

The Claremont Hotel provides complimentary transportation from Oakland International Airport.

I (or my Company) Will ☐ Will Not ☐ Guarantee Payment

Note: Reservations will not be held after 6 pm unless accompanied by deposit or letter of company guarantee.

NAME(S) OF ADDITIONAL PERSON(S) SHARING ROOM

_____

_____

Check Out Time 1:00 pm - Check In Time 2:00 pm

69. Environmental Effects on the Mechanical Strength of Glass
    M. Tomozawa and Y. Oka, *Rennselear Polytechnic Institute, Troy, New York.*

c. Oxidation Effects

70. Effects of Oxidation on the Surface and Near-Surface Structure of Silicon Nitride
    Nancy J. Tighe, *National Bureau of Standards, Washington, D.C.*
71. Effects of Oxidation on the Strength and Fatigue Resistance of Hot Pressed Silicon Nitride
    K. Jakus, J. E. Ritter, Jr., and W. Weinraub, *University of Massachusetts, Amherst, Massachusetts.*
72. Contact Stress and Coefficient of Friction Effects on Ceramic Interfaces
    D. Carruthers, D. Richardson and L. Lindberg, *Airesearch Manufacturing Company of Arizona, Phoenix, Arizona.*

CONFERENCE LOGISTICS

Meeting Location

Plenary sessions will be held at:

Engineering Center
College of Engineering
University of California at Berkeley
Berkeley, California 94720

The Conference Office will be open as follows for pick-up of conference materials, on-site registration, and participant assistance:

DATE	TIME	LOCATION
Sunday, July 27	3 p.m. - 8 p.m.	UC Berkeley-Cheney Student Residence
Monday, July 28	8 a.m. - 5 p.m.	Engineering Center, UC Berkeley
Tuesday, July 29	8 a.m. - 5 p.m.	Engineering Center, UC Berkeley
Wednesday, July 30	8 a.m. - 1 p.m.	Engineering Center, UC Berkeley
Thursday, July 31	8 a.m. - 5 p.m.	Engineering Center, UC Berkeley
Friday, August 1	8 a.m. - 5 p.m.	Engineering Center, UC Berkeley

Housing in Student Residence Hall

Payment in full must be received by the Conference Coordinator, Lawrence Berkeley Laboratory, in advance in order to reserve a room in the Student Residence Hall. *Payment and reservation should be received not later than July 9, 1980.* Late notification may result in space not being available.

The student residence package permits arrival as early as Sunday, July 27 (3:00 p.m.) and departure as late as Saturday, August 2 (1:00 p.m.). The package includes:

Sunday, July 27 - Room only, check in between 3:00 - 8:00 p.m.
Monday, July 28 - Room, breakfast
Tuesday, July 29 - Room, breakfast
Wednesday, July 30 - Room, breakfast
Thursday, July 31 - Room, breakfast
Friday, August 1 - Room, breakfast
Saturday, August 2 - Breakfast, check out by 1:00 p.m.

The fee for this accommodation is a package price for the period of the Symposium. No refunds are allowed for unused meals or for room occupancy of less than six (6) nights. Breakfast tickets will be issued at check in. *Refunds for cancellations cannot be made after July 18, 1980.*

Most of the student residence accommodation is for two people per room; a limited number of single rooms are available. Please indicate choice of roommate if known; otherwise, roommates will be assigned on a random basis. Student residence accommodation is not suitable for children under 16; full rates apply to all persons regardless of age. The package fee is:

$120.00 per person single occupancy
$ 90.00 per person double occupancy

A room consists of two twin-sized beds, with one desk and one chest of drawers per person. No individual bathroom facilities are in the rooms. Community bathrooms are located on each floor, and have enclosed shower facilities and sinks but no tubs.

Hotels

Blocks of rooms have been reserved at the two hotels below. Participants desiring accommodations at either should make their own arrangements, using the enclosed reservation request cards. The rates quoted do not include meals, tax or gratuity. It is advisable when making reservations to include the first night's deposit. It is strongly advised that requests for housing be made as early as possible to ensure availability, preferably no later than July 1, 1980.

CLAREMONT RESORT HOTEL
Ashby and Domingo Avenues
Berkeley, California 94705
(415) 843-3000
$46 per night single or double occupancy

Each oversized guestroom features television, direct-dial telephone, individuality, warmth and luxury with a resort atmosphere. Olympic outdoor heated pool, night-lighted tennis courts, saunas, whirlpool jacuzzi. Self-service laundry located in hotel. Babysitting service available at a nominal charge with 3-4 hour notice. Fifteen minutes from campus by car. No public transportation. Suitable for families. No extra charge for third person.

DURANT HOTEL
2600 Durant Avenue
Berkeley, California 94704
(415) 845-8981

For rates, see attached hotel reservation request card.

The Durant Hotel is within easy walking distance of the UC Berkeley campus. It is an older hotel with modest rooms and traditional hospitality. Convenient to shops and restaurants in campus area. Parking is available at $1.50-$2.50 per day, but no parking guarantee. TVs in each room, mostly color. No charge for children 12 and under occupying same room as parents.

REGISTRATION INFORMATION

The registration fee of U.S. $120.00 includes:

- Attendance at sessions
- Conference portfolio and abstracts
- Conference proceedings upon publication
- Wine and cheese party the evening of Monday, July 28
- Reception, banquet, and a speaker appropriate to the sessions the evening of Tuesday, July 29
- Coffee break refreshments

To register, please return the enclosed application and appropriate fees *by July 18, 1980.* Refund requests must be received by this deadline date.

TRANSPORTATION

From the San Francisco Airport

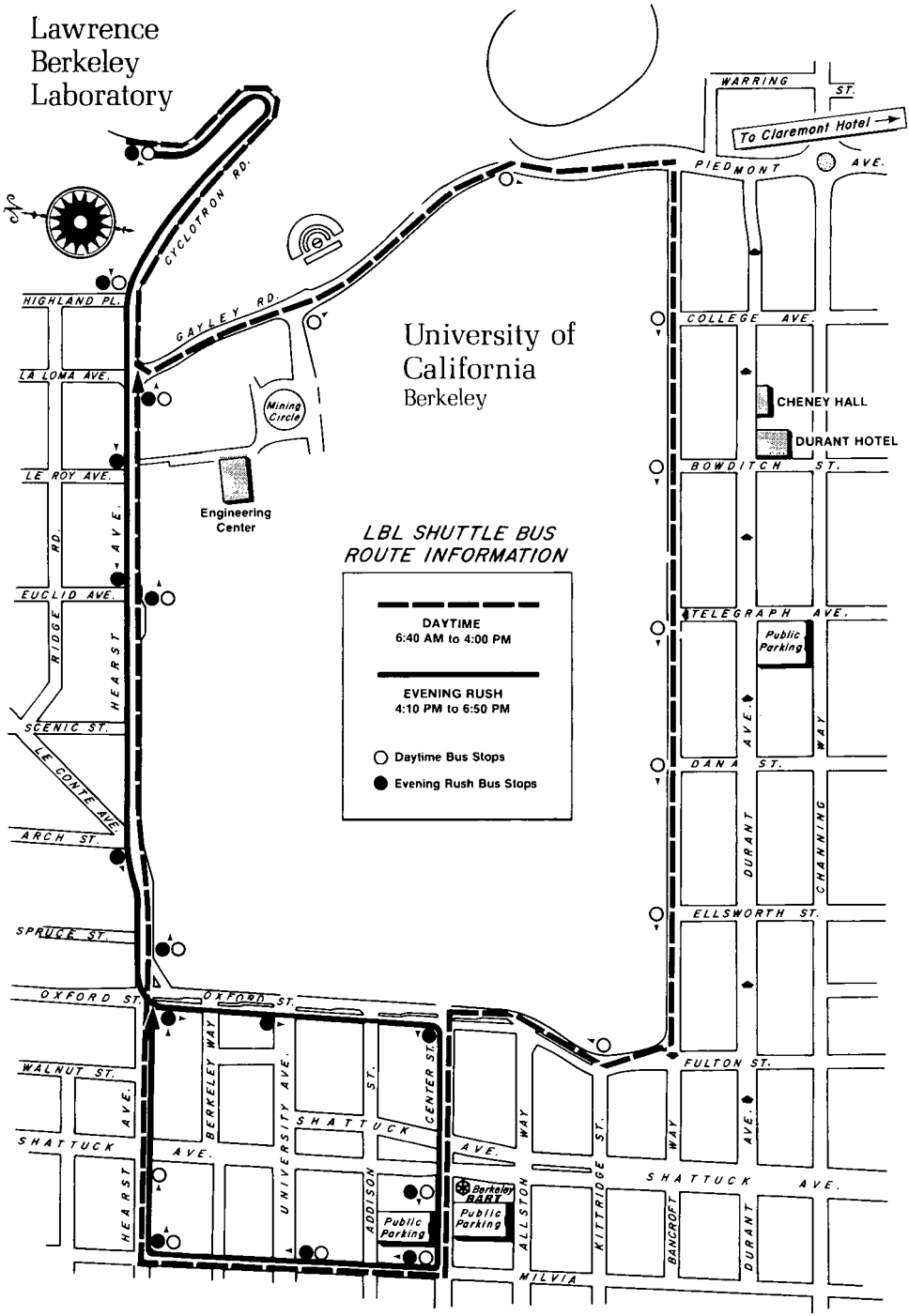
Airport Connection

Transportation currently is available at $8.00 through the *Airport Connection* to the Hotel Durant and $9.00 to the Hotel Claremont. The Durant Hotel is the closest stop to Cheney Hall and the campus.

The Airport Connection departs the San Francisco Airport approximately every hour from outside the baggage claim area of your airline at the traffic island. Look for concrete pillar with a blue stripe around it. The stop is next to the pillar at the Authorized Courtesy Vehicle sign. For departure times and reservations, which are essential, call (415) 941-0150, or write the Airport Connection, 901 Ashby Ave., Berkeley, CA 94710.

Airport Limousine Service

With 24-hour advance notice this company will provide door-to-door service to any destination in Berkeley; current rates are $18.00 per person one way, with a $5.00 surcharge if arrival is between 12:00 midnight and 4:00 a.m. If prior arrangements are not made, service may still be available but is not guaranteed. The company has dispatching counters in the baggage claim area of each of the terminals. Make arrangements *directly* by writing Box 60752, Sunnyvale, CA 94088, or calling (415) 568-1035.


Lawrence
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Laboratory
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California
Berkeley
LBL SHUTTLE BUS
ROUTE INFORMATION
DAYTIME
6:40 AM to 4:00 PM
EVENING RUSH
4:10 PM to 6:50 PM
Daytime Bus Stops
Evening Rush Bus Stops
CYCLOTRON RD.
GAYLEY RD.
Mining Circle
Engineering Center
HIGHLAND PL.
LA LOMA AVE.
LE ROY AVE.
EUCLID AVE.
SCENIC ST.
LE CONTE AVE.
ARCH ST.
SPRUCE ST.
OXFORD ST.
WALNUT ST.
SHATTUCK AVE.
HEARST AVE.
RIDGE RD.
BERKELEY WAY
UNIVERSITY AVE.
ADDISON ST.
CENTER ST.
Public Parking
Berkeley BART
Public Parking
ALLSTON WAY
KITTRIDGE ST.
BANCROFT WAY
DURANT AVE.
MILVIA
FULTON ST.
ELLSWORTH ST.
CHANNING WAY
DANA ST.
TELEGRAPH AVE.
Public Parking
BOWDITCH ST.
COLLEGE AVE.
CHENEY HALL
DURANT HOTEL
PIEDMONT AVE.
WARRING ST.
To Claremont Hotel

Taxicab

Taxicab direct from the San Francisco Airport to destinations in Berkeley for 1-5 persons is approximately $27.00. Running time is about 1 hour.

From the Oakland Airport

Taxicab service is suggested to the Durant Hotel and to the Student Residence Hall accommodation. The fare is approximately $16.00 and you should allow 30 minutes each way. If preferred, shuttle bus service is available at frequent intervals from Oakland Airport to the Bay Area Rapid Transit (BART) Coliseum Station. BART trains run at intervals of approximately 15 minutes on the Richmond Line. After boarding BART, ride the Richmond Train to Berkeley Station. Before leaving the paid area of the station, obtain an AC transfer from the white transfer dispenser. At the street level, one short block south at Shattuck Avenue and Allston Way, board the #58 AC bus and tell the driver that you wish to get off at Durant Avenue and Bowditch Street. Service to the Oakland Airport is the reverse: the bus departs from Bowditch Street and Bancroft Way and at the Berkeley Station you board a Fremont Train and ride to the Coliseum Station. Running time is approximately 1 hour.

Courtesy transportation is available only to the Claremont Hotel. Call on the direct line in the baggage area on arrival.

From Housing Sites to UC Campus

Depending on the number of guests staying at the different housing sites, special shuttle bus service may be arranged. Other means are described below.

Hotel Durant and Cheney Hall

The LBL Shuttle Bus map shows the locations of Durant Hotel and Cheney Hall. Walk one block to Bowditch and Bancroft and flag down the LBL Shuttle Bus; go to Hearst and Gayley Roads and walk to the Engineering Center.

Claremont Hotel

Take AC Transit's "E" bus from Ashby and Domingo to College and Claremont, transfer to #51 and ride to Bancroft. Change to the LBL Shuttle Bus at the corner of College and Bancroft and get off at the corner of Hearst and Gayley Roads; walk to the Engineering Center. The AC Transit fare is 35¢ (exact fare is required). The total running time is about 50 minutes.

SPECIAL NOTES

- On-site purchase of tickets for guests to attend the wine and cheese party on July 28, and the reception and banquet on July 29, will be on a space-available basis.
- The banquet (included in the registration fee) will be held at the Lawrence Hall of Science. Details will be provided at the Symposium.
- If you have any handicap or dietary restrictions, please advise us *immediately*.
- Request for refunds of fees paid for student residence hall accommodation

or for registration cannot be made if received after July 18, 1980.

PROGRAM CHAIRMAN

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