## VOLUME II

C. EXPERIMENTAL METHODS

EXPERIMENTAL TECHNIQUES AND MOLECULAR BEAMS.

- C.1 F. Robben Measurement of Velocity Distribution Function from Electron Beam Fluorescence.
- C.2 P. Rockett A Study of some Thermal States of C.L. Brundin Nitrogen by the Method of Electron Beam Induced Fluorescence.
- C.3 J. Korving Measurement of Alignment of Angular-A.G. Visser Momenta of Diatomic Molecules in a B.S. Douma Supersonic Beam. G.W. 't Hooft J.J.M. Beenakker
- C.4 M.E.H. van Dongen Optical Reflection Method to Study A.J.M. Versteeg Thermal Accommodation Effects in a Shocktube.
- C.5 N. Fukuta A New Method for Precision Measure-J.A. Armstrong ments of the Deposition Coefficient of Water Wapor onto Ice.
- C.6 K. Kienappel The Influence of the Orifice Geometry on Measured Static Pressure.
- C.7 G.E.J. Eggermont The Thermomagnetic Pressure Difference L.J.F. Hermans in Rarefied Polyatomic Gases: a New H.F.P. Knaap Type of Thermal Slip. J.J.M. Beenakker
- C.8 R.C. Tseng Rarefaction Effects on Gas Lubricated Bearings in a Magnetic Recording Disk File.

- Quantum Effects in Highly Expanded C.9 D.R. Miller J.P. Toennies Helium Nozzle Beams. K. Winkelmann C.10 U. Buck Molecular Beams from Free Jet H. Pauly Expansions of Molecules and Mixed D. Pust Gases. J. Schleusener C.11 R. Campargue High Intensity Supersonic Molecular A. Lebehot Beams with Extremely Narrow Energy Spreads in the 0-37 eV Range.
- C.12 G. Dettleff Nozzle Beam Profile Measurements U. Bossel Verify Assumption and Results of Recent Beam Intensity Analysis.
- C.13 G. Rotzoll Velocity Distribution of Seeded R. Viard Molecular Beams. K. Schügerl
- C.14 H. Malthan Direct Molecular Beam Measurements J.P. Toennies of Rotational State Distributions in Nozzle Beams.
- C.15 J. Gspann Mass Separation in Molecular Beams by Crossed Free Jets.
- D. FLOWS AROUND BODIES AND INTERNAL FLOWS FLOWS OVER FLAT PLATES, CONES, SPHERES, CYLINDERS AND THREE DIMENSIONAL BODIES, FLOWS THROUGH DUCTS AND CHANNELS.

D.1 C.L. Brundin A Traditional Look at Transition Flow.

XVI

- D.2 J.B. French Rarefied Gas Dynamics ProblemsAssociated with Composition and Density Measurements of Planetary Atmosphere.
- D.3 H. Legge A Study of Background Molecule P. Raghuraman Scattering in Free Jet Expansions Through Flat Plate Drag Measurements.
- D.4 R.J. Petraites Three Dimensional Effects on a Flat I.E. Vas Plate in Hypersonic Merged Flow. S.M. Bogdonoff
- D.5 D.I. Pullin Hypersonic Leading Edge Flow of a J.K. Harvey Diatomic Gas by the Direct Simulation G.K. Bienkowski Method.

D.6 Yu.A. Koshmarov Studies of the Leading Edge Bluntness S.B. Svirschevsky Effect on the Heat Transfer of a Plate in the Low Density Transitional Flow Regime.

D.7 W.L. Harris, Sr. Non-Similar Solutions of the Hypersonic S. Kumar Leading Edge on a Cone.

D.8 F.L. Kleinschmidt The Flow about a Yawed Cone in a I.E. Vas Hypersonic Rarefied Gas Stream. S.M. Bogdonoff

- D.9 M. Becker Forces and Heat Transfer on Blunted F. Bachour Cones in the Transition Regime. E. Weber D. Erdtel
- D.10 R.W. Jeffery Waveriders in Low Density Hypersonic J.K. Harvey Flow.

D.11 U. Samir Laboratory Simulation of Space Aero-W.A. Oran dynamic Phenomena: Satellite Wake N.H. Stone Studies. D.12 A.A. Pyarnpuu A Computational Study of the Bodies G.I. Zmievskaya Aerodynamic Drag in Rarefied Atmosphere. D.13 K.S. Hadjamichalis The Effect of Wall Temperature on C.L. Brundin Sphere Drag in Hypersonic Transition Flow. C.D. Scott D.14 An Experimental and Analytical Study of Slip and Catalytic Boundary Conditions Applied to Spheres in Low Reynolds Number Arc Jet Flows. D.15 R.J. Cresci Rarefied Flow Field about a Hemis-R. Torrani phere-Cylinder. D.16 S.C. Metcalf Heat Transfer to Bluff Faced and G.T. Coleman Hemispherical Faced Cylinders between C.J. Berry Continuum and Free Molecular Flow Limits. D.17 N. Afzal Hypersonic Rarefied Viscous Flow V.V. Satyamurty near the Stagnation Region of a Circular Cylinder. D.18 D.L. Whitfield Heat Flux to Normal Flat Plates in Rarefied Hypersonic Flow. D.19 R.J. Cole Drag and Conductance of Free Mole-D.C. Pack cular Flow through a Rectangular Duct. D.20 A. Ansari Free Molecule Flow in Rectangular R.K. Irey Channels.

XVIII

- Mass-Flow Measurements for Sharp-D.21 A. Naumann C.H. Chun Edged Orifices in Low Density Flow. D.22 Y.D. Nagornykh On the Flow of Gas Mixtures in L. Trilling Capillary Tubes. D.23 Y. Sone Rarefied Gas Flow Induced between Non-Parallel Plane Walls with Different Temperatures. Stationary interaction of the System D.24 S. Kosowski of Two Spheres moving in Free-Molecular Medium.
- E. GAS SURFACE INTERACTIONS PHENOMENOLOGY, ACCOMMODATION COEFFICIENTS AND REACTIVE SCATTERING.

É.1	I. Kuščer	Phenomenology of Gas-Surface Accommodation.
E.2	R.G. Barantsev	Gas-Surface Interaction and Free Molecular Interference.
E.3	F.C. Hurlbut	Current Experiments and Open Questions in Gas-Surface Scattering.
E.4	G. Armand J. Lapujoulade	Theory of Collision between an Atom and a simple Cubic Harmonic Lattice. Comparison with some recent Experi- mental Results.
E.5	E. Hulpke	A Simple Model which Correctly Predicts the Scattering of Heavy Particles from

XIX

a Well Defined Surface at Translational

Energies between 2 and 20 eV.

- E.6 G. Boato Diffraction of Hydrogen Molecules from the (001) Face of LiF at 80°K. P. Cantini L. Mattera E.7 H. Hoinkes Surface-Scattering and Diffraction H. Finzel Experiments with Monoenergetic Beams H. Frank of Atomic Hydrogen and Deuterium. H. Nahr W. Wilsch E.8 S.M. Liu Transition Between Atom-Surface W.E. Rodgers Scattering Regimes. E.L. Knuth
- E.9 M. Seidl Measurement of Momentum Accomodation
   E. Steinheil Coefficients on Surfaces Characterized by Auger Spectroscopy, SIMS and LEED.
- E.10 M. Cavallini Twin Modulated Molecular Beam Technique G. Nencini and Static Secondary Ion Mass Spectrometry Applied to Catalytic Reaction Studies and Surface Analysis.
- E.11 C. Schütze Investigations of the Reactions of O<sub>2</sub>,
   K. Schügerl N<sub>2</sub>O and H<sub>2</sub>O on Ge, Si and Graphite Surfaces by Means of Dynamical Mole-cular Beams.
- E.12 W.J.C. Müller Parametric Representation of Beam Accommodation Coefficients.
- E.13 F.M. Devienne Analysis of Chemically Heterogeneous A. Diebold Surfaces by the Means of High Energy Molecular Beams.
- E.14 D. Menzel Energy Transfer by Single Collisions J. Kouptsidis and by Trapping in Thermal Accomodation.

- E.15 L.B. Thomas The Extraction of Knudsen Accommo-D.V. Roach dation Coefficients from Thermal Conductivity Measurements in the Transition Regime - An Experimental Test of Merit of Methods with Argon and Krypton.
- E.16 E.N. Evlanov On the Possible Method of Gas-Yu. V. Lebedev Satellite Surface Interaction V.B. Leonas Studies.
- F. CONDENSATION PROBLEMS THEORETICAL AND EXPERIMENTAL RESEARCH ON CONDENSATION IN FLOWS AND ON SURFACES.

F.1	N. Bellomo	Kinetic Theory of Vaporization and Condensation of Liquid Droplets in Rarefied Gas Conditions.
F.2	P. Gajewski A. Kulicki A. Wisniewski	A Kinetic Model of the Vapor Condensation in the Presence of a Noncondensable Gas.
F.3	T. Matsushita	An Analytical Study of the Problem of Evaporation and Condensation Using the Finite Element Method.
F.4	J.W. Cipolla, Jr. H. Lang S.K. Loyalka	Temperature and Partial Pressure Jumps during Evaporation and Condensation of a Multicomponent

- F.5 A.E. Beylich Theoretical Investigation of the Argon Dimerization.
- F.6 M. Murakami Kinetic Approach to the Transient K. Oshima Evaporation and Condensation Problem.

Gas Mixture.

- F.7 J.W.L. Lewis Laser Diagnostics of a Condensing W.D. Williams Binary Mixture Expansion Flow Field. H.M. Powell
- F.8 J. Farges Electron Diffraction Measurement of
  M.F. de Feraudy the Temperature of the very Minute
  B. Raoult Argon Clusters in a Supersonic Beam.
  G. Torchet
- F.9 P.R. Jeuck, 3rd Electron Diffraction Studies of
  G. Saxon Clustered Nozzle Beams.
  G.D. Stein
- F.10 O.F. Hagena Cluster Beams from Gas Mixtures: H. von Wedel Effect of Carrier Gas on Cluster Size and Beam Intensity.
- F.11 M.M.R. Williams On the Velocity Distribution of Coagulating Particles.
- F.12 H. Lang Reciprocity and Phenomenological I. Kuščer Coefficients in Liquid-Vapor Phase Change.
- F.13 P. Gajewski The Vapor Phase Phenomena in a
  A. Kulicki Nonsteady Condensation Process.
  A. Wisniewski
- F.14 P.D. Bentley The Condensation of Gases on Cold B.A. Hands Surfaces.

XXII