

Victor E. Viola, Jr.

BIOGRAPHICAL SKETCH

VIOLA, Victor E., Jr., Department of Chemistry, Indiana University, Bloomington, Indiana 47405. Born: Abilene, Kansas, April 8, 1935; Married 1962 (Nancy); three children (Charley, Randy and Gina Viola-Brown). University of Kansas, A.B. 1957; University of California, Berkeley, Ph.D., 1961. Lawrence Berkeley Laboratory, Postdoctoral Fellow and University of California, Instructor 1961-62. Centre Européenne pour la Recherche Nucléaire, NSF and Ford Foundation Postdoctoral Fellow 1963-64. Argonne National Laboratory, Research Associate 1964-66. University of Maryland, Assistant Professor of Chemistry 1966-68, Associate Professor of Chemistry 1968-74, Professor of Chemistry 1974-80. University of California, Visiting Professor 1973-74, Indiana University, Professor of Chemistry 1980 -, Director, Indiana University Cyclotron Facility 1986-7, Distinguished Professor of Chemistry, 1990, Adjunct Professor of Physics, 1998. Distinguished Professor Emeritus 2005.

MAJOR RESEARCH ACCOMPLISHMENTS

Heavy-ion-induced Fission Reactions – The first systematic studies of heavy-ion-induced fission reactions were conducted at the Lawrence Berkeley Laboratory in the early 1960's in collaboration with T. Sikkeland. This research broadly mapped the dependence of fission on projectile bombarding energy, angular momentum and target mass, thus greatly extending the understanding of fission probabilities, energetics and saddle and scission shapes. In addition, the measurements revealed that an understanding of reaction dynamics in the form of incomplete-fusion processes was critical to the interpretation of heavy-ion studies. This research subsequently led to the development of (2) and (3) below.

Fission Kinetic Energy Systematics – Fission fragment kinetic-energies for excited nuclei were shown to depend systematically on the Coulomb parameter $Z^2/A^{1/3}$. These systematics have served as an important test of one- and two-body dissipation in fission and continue to provide a fundamental baseline for evaluating Coulomb effects in complex nuclear reactions.

Collision Dynamics: Linear-momentum-transfer Systematics – The use of correlated fission fragments to measure the distribution of linear momenta produced in collisions involving complex nuclei was pioneered by Viola and his collaborators. These investigations, which paralleled advancements in accelerator technology over a period of 25 years, produced the first systematic overview of the relative importance of mechanisms ranging from complete fusion to transfer processes in low-to-intermediate energy reactions. They have played a central role in the interpretation of the physics of hot nuclei.

Damped Collisions – Experiments at the LBL SuperHILAC in 1973 led to the discovery of damped (deep inelastic) collisions in reactions between two heavy nuclei. This work, performed in collaboration with J.R. Huizenga and K.L. Wolf, initiated a 15-year program in which the mechanisms of energy dissipation and nuclear exchange were elucidated. In the 1980's the Indiana group performed high resolution mass and charge measurements that provided one of the most sensitive tests of nucleon-charge theories.

Li, Be and B Nucleosynthesis – Measurements of excitation functions for production of Li, Be and B isotopes in light-ion-induced reactions, complemented by the results from Sam Austin's

group at Michigan State, have successfully explained the origin of the isotopes ${}^6\text{Li}$, ${}^9\text{Be}$, ${}^{10}\text{B}$ and ${}^{11}\text{B}$ in terms of interactions between galactic cosmic rays and the interstellar medium. The failure of this model to account for ${}^7\text{Li}$ has implications for Big Bang nucleosynthesis. In addition, these data are currently being applied to understanding the chemical evolution of the early galaxy.

Science Education – Concern for a broader understanding of nuclear phenomena by the general public has been expressed at various levels. These include a high school text “Heart of Matter”, chapters in the Encyclopedia of Chemistry, The Handbook of Nuclear Chemistry, popular articles in Scientific American and the American Scientist, articles in the Journal of Chemical education and teaching a nuclear chemistry course for over 1,000 advanced chemistry majors, as well inclusion of a nuclear segment in teaching over 10,000 introductory chemistry students.

Detector Technology – Pioneered the application of silicon detectors to the study of nuclear fission reactions, with Torbjorn Sikkeland.

HONORS AND AWARDS

Awards:

Summerfield Scholarship, 1954-57 (University of Kansas)
Cook Scholarship, 1955-56 (University of Kansas)
Lawson Scholarship, 1956-57 (University of Kansas)
University Scholarship, 1958-59 (University of California, Berkeley)
Woodrow Wilson Graduate Fellowship, 1959-60 (University of California, Berkeley)
NSF Postdoctoral Fellowship, 1963 (CERN, Geneva, Switzerland)
University Research Professorship, 1979 (University of Maryland)
Guggenheim Fellowship, 1980-81 (Indiana University)
C.I.L. Distinguished Lecturer, 1982 (Simon Fraser University)
American Chemical Society Award in Nuclear Chemistry, 1986
Fellow, American Physical Society, 1988
Fellow, American Association for Advancement of Science, 1989
Distinguished Professor, Indiana University, 1990
Tracy M. Sonneborn Award, Indiana University, 2000
Frontiers in Chemical Research, Distinguished Lecturer, 2004 (Texas A&M University)
Physical Review Outstanding Referee, 2011

Honorary Societies:

Phi Beta Kappa
Sigma Xi
Phi Lambda Upsilon
Omicron Delta Kappa

PROFESSIONAL ORGANIZATIONS (* - elected)

American Association of University Professors (1967-95)
Secretary*, 1970-71
President*, University of Maryland Chapter, 1971-72
Executive Committee, 1972-73

American Chemical Society, Division of Nuclear Chemistry and Technology,
Secretary*, 1972-74
Chairman*, 1980
Executive Committee*, 1981,1993-95
Undergraduate Awards Committee, 1988-90

American Physical Society
Division of Nuclear Physics
Executive Committee* (1988-90)
Committee on Resources (1987-90)
Fellowship Committee, (1993-95)
Nuclear Physics Summer School, Organizing Committee (1989-97)
Division of Cosmic Ray Physics (exp)

American Association for the Advancement of Science
Nominating Committee (Physics)*, 1992-94; Chair, 1993

NATIONAL LABORATORY SERVICE

Lawrence Berkeley Laboratory

Super HILAC User's Association Executive Committee*, 1975-77; Chair, 1977
Nuclear Sciences Division Review Committee, 1981-83; Chair, 1983
Bevalac Program Advisory Committee, 1988-90, Chair, 1989-90
88-inch Cyclotron Program Advisory Committee, 1995-00, Chair 1999-2001

National Superconducting Cyclotron Laboratory

User's Association Executive Committee*, 1981-83.
Program Advisory Committee, 1984-87.

Los Alamos Meson Production Facility, Program Advisory Committee, 1984-86.

Hollifield Heavy-Ion Research Facility User's Association, Executive Committee*, 1979-80, Chair, 1980

Argonne National Laboratory, ATLAS Program Advisory Committee, 1988-90

Lawrence Livermore National Laboratory, Nuclear Chemistry Review Committee, 1986-90.

Brookhaven National Laboratory, Chemistry Department Visiting Committee, 1995-1999.

FEDERAL AGENCY SERVICE

NSF-DOE Nuclear Sciences Advisory Committee

Subcommittee on Facilities, 1977

ACS Representative, 1993-94

NSF Review Panel on Small Facilities, 1982

NSF/NRC Workshop on Future Directions in Transplutonium Elements

Research Panel on Nuclear Research, Rapporteur, 1983.

National Research Council, Subcommittee on Nuclear and Radiochemistry, 1986-89.

NSF Division of Physics, Site Visiting Team, National Superconducting Cyclotron Facility, 1986

NSF Panel on Minority Fellowships 1990-91

Department of Energy, Low Energy Physics Review Committee, 2001.

Grant Reviews, NSF, DOE, Australian National University

CONFERENCES

ACS Symposium on the Origin of the Elements, organizer, 1976

Winter Workshop on Nuclear Dynamics

Organizing Committee, 1981-91

Chair, 1984,1986.

Gordon Research Conference on Nuclear Chemistry

Vice-chair, 1985;

Chairman, 1986;

Executive Committee, 1987-

Int. Symposium on the 50th Anniversary of the Discovery of the Transuranium Elements,

Organizing Committee, 1990.

Biennial Conference on Chemical Education, Organizing Committee, 1990.

Conference on Women in Science, local Planning Committee, 1991-92

International Conference on Nuclear Physics at Storage Rings

Organizing Committee, 1992-1999,

Program Committee, Indiana University, 1999

Conference on Heavy-Ion Collisions 03, 2003

Multiple session chair responsibilities

UNIVERSITY SERVICE

University of Maryland

Coordinator for General Chemistry, 1967-69
Coordinator, Division of Nuclear and Atmospheric Chemistry, 1972-73
Chemistry Associates of Maryland, High School Chemistry text development project, 1970-92
Chemistry Department Advisory Committee*, 1974-78
Coordinator, Division of Environmental Nuclear and Geochemistry, 1976-78
University Faculty Senate*, 1977-79
Multiple departmental, COAS and University committees

Indiana University

Department of Chemistry

Coordinator, Physical Chemistry Division, 1983-86; 2000-01
Chair, Chemical Physics Program, 1983-85.
Chair, Chemistry Department Research Ranks Committee, 1986-2003
Chemistry Department Policy Committee*, 1996-98
Chair, Chemistry Department Awards Committee, 1999-2002

Indiana University Cyclotron Facility

Director, Indiana University Cyclotron Facility, 1986-87.
IUCF Lab Activities Report, 2001-2003
Search and Screen Committee, IUCF Director, 2003-2004

College of Arts and Sciences, Indiana University

Committee on Core Curriculum in the Physical and Life Sciences, 1990-91
Tenure Committee 1991-93
College Incentive Plan Subcommittee on the Natural Sciences, 1997-98
Policy Committee*, 1998-2001

Dean of Faculties, Indiana University, Search Committee, 1996

Alliance of Distinguished and Titled Professors*, Steering Committee, 1993-1999

RUGS Internal Review Committee, Indiana University Cyclotron Facility, 1999

Faculty Council*, 1993-95; 2000-2002

Ad Hoc Committee for Excellence, 2002

Multiple departmental, COAS and University committees

University Tenure Committee, 1997-1999

EDITORIAL SERVICE

Editorial Board, ACS Monograph Series, 1970-72

Physical Review Letters, Divisional Associate Editor, 1988-90.

Manuscript Reviews

Physical Review Letters

Physical Review C

Physics Letters

Nuclear Physics

Journal of Chemical Education

Journal of Inorganic and Nuclear Chemistry

NON-ACADEMIC SERVICE

College Park Woods (Maryland) Civic Association, Treasurer*, 1975

College Park Boy's Club, umpire 1968-69, 1975

Elm Heights Citizens Association (Bloomington)

University of Maryland Track and Field

Meet official

ACC Indoor Championships 1977

Indiana University Track and Field and Cross Country

Meet official

Big 10 Indoor Championships, 2000

Big 10 Outdoor Championships, 2001

Big 10 Cross Country Championships 2006

Junior Olympics State Cross Country Meet official 2003