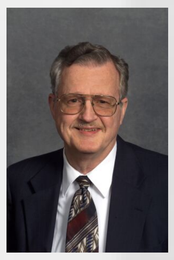
ACADEMIC FAMILY TREE OF PROFESSOR JOHN NEWMAN

Vijay A. Sethuraman[a,*], and Paul Albertus[a, b,*]

[a] Environmental Energy Technology Division, Lawrence Berkeley National Laboratory,
[b] Department of Chemical Engineering, University of California
Berkeley, CA 94720, USA
E-mail: vj@berkeley.edu, albertus@berkeley.edu

The field of electrochemical engineering, especially the design and analysis of electrochemical systems, has progressed greatly due to the work of Professor John Newman at the University of California, Berkeley. We present the academic family tree of Professor John Newman comprising his students and their students, and a list of theses and dissertations he directed at UC Berkeley. Professor Newman has graduated thirty Masters and forty three PhD students and seventeen have gone on to become faculty members.

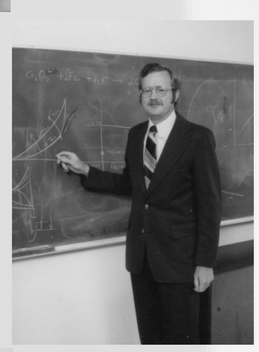


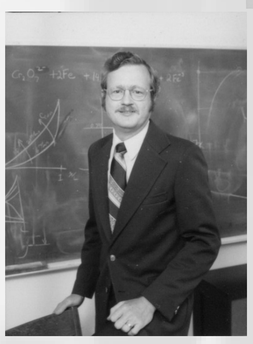
Biography

Professor John Newman earned his bachelor's degree in chemical engineering in 1960 from Northwestern University. While at Northwestern University, he was an engineering co-op student at Oak Ridge National Laboratory. Professor Newman entered the University of California, Berkeley for graduate study, obtaining his master's degree in 1962, on current distribution in porous electrodes, under the guidance of Professor Charles Tobias. In 1963, he obtained his doctorate on steady laminar flow past a circular cylinder at high Reynolds numbers. While a PhD student, he contributed to the preparation of major portions of the English edition of Levich's book, Physicochemical Hydrodynamics, published in 1962.

Shortly after receiving his doctorate, Professor Newman joined the faculty at UC Berkeley and became a full professor in 1970, where he currently holds the Charles W. Tobias Chair in Electrochemistry. He won the Young Author's Prize for his work on current distribution on a rotating disk below the limiting current. In 1969, Professor Newman again won the Young Author's Prize for his work with his student William Parish on modeling channel electrochemical flow cells. In 1985, he received the David C. Grahame Award of the ECS Physical and Analytical Electrochemistry Division. Professor Newman's book, *Electrochemical Systems*, published in 1973, with a second edition in 1991, and a third in 2004 (with co-author Karen E. Thomas-Alyea), is used throughout the world as a monograph and graduate text in electrochemical engineering. He is an ECS Fellow and an honorary member. His other awards include the Henry B. Linford Award for Distinguished Teaching in 1990, the Olin Palladium Medal in 1991, and the Vittorio de Nora Award in 2008. The title of Professor Newman's talk for the Vittorio de Nora Award was "From nW to TW," and it focused on his recent work on the derivations of the Onsager reciprocal relations for multicomponent diffusion, the electrochemical reduction of carbon dioxide and water to carbon monoxide and hydrogen, and the production of liquid fuels from renewable energy. He was associate editor for the Journal of the Electrochemical Society for 10 years starting in 1990.

Professor Newman is also a Faculty Senior Scientist and Principal Investigator in the Environmental Energy Technologies Division at Lawrence Berkeley National Laboratory, where he is in charge of the Batteries for Advanced Transportation Technologies program. In 2002, he spent a semester as the Onsager Professor at the Norwegian University of Science and Technology in Trondheim, Norway, and in 1999, was elected to the National Academy of Engineering. . J. S. Newman and C. W. Tobias, *J. Electrochem. Soc.,* **109,** 1183 (1962).
. W. R. Parrish and J. Newman, *J. Electrochem. Soc.*, **116,** 169 (1969).





LIST OF THESES AND DISSERTATIONS DIRECTED BY PROFESSOR NEWMAN AT UC-BERKELEY

Thomas G. Atkins
Water Tunnel with Moving Walls, MS (1965)

Limin Hsueh
Mass Transfer and Polarization at a Rotating Disk Electrode, MS (1966)
Diffusion and Migration in Electrochemical Systems, PhD (1968)

Ping Huei Sih
Numerical Computation of Flow past Obstacles, MS (1966)
Mass Transfer to the Rear of an Object at Low Reynolds Number Flow, PhD (1971)

Marvin Edward McDonald
Numerical Calculation for the Steady Laminar Flow past a Circular Cylinder, MS (1966)

Paul Milios
A Theoretical Analysis of the Moving Boundary Measurement of Transference Numbers, MS (1967)

THOMAS W. CHAPMAN (UNIVERSITY OF WISCONSIN-MADISON)
The Transport Properties of Concentrated Electrolytic Solutions, PhD (1967)

Vinay Marathe
Current Distribution on a Rotating Disk Electrode, MS (1968)

KEMAL NISANCIOGLU (NORWEGIAN UNIVERSITY OF SCIENCE AND TECHNOLOGY)
Diffusion in Concentrated Electrolytic Solutions, MS (1970)
Current Distribution and Mass Transfer in Rotating Electrode Systems, PhD (1973)

Kong-Heong Tan
Moving-Boundary Measurements of Transference Numbers, MS (1970)

NADER VAHDAT (TUSKEGEE UNIVERSITY)
Corrosion of Iron Rotating Disk, MS (1972)

Harry Hung-Kwan Yip
Mass Transfer Coefficient in Packed Beds at Low Reynolds Numbers, MS (1973)

Robert Victor Homsy
Mass Transfer to a Plane below a Rotating Disk, PhD (1974)

Thomas James Edwards
Thermodynamics of Aqueous Solutions Containing One or More Volatile Weak Electrolytes, MS (1974)
Vapor-Liquid Equilibria in Multicomponent Aqueous Solutions of Volatile Electrolytes, PhD (1977)

Charles Milton Mohr, Jr.
Mass Transfer in Rotating Electrode Systems, PhD (1975)

Joseph John Miksis, Jr.
Primary Resistances for Ring-Disk Electrodes, MS (1975)

PETER WILLEM APPEL (DELFT UNIVERSITY OF TECHNOLOGY)
Electrochemical Systems: Impedance of a Rotating Disk and Mass Transfer in Packed Beds, PhD (1976)

RALPH EDWARD WHITE (UNIVERSITY OF SOUTH CAROLINA)
Simultaneous Reactions on a Rotating-Disk Electrode, PhD (1977)

Bruce Abbot Gordon
Corrosion of Iron-Base Alloys by Coal Char at 871° and 982°C, MS (1978)

PETER S. FEDKIW (NORTH CAROLINA STATE UNIVERSITY)
Mass Transfer Controlled Reactions in Packed Beds at Low Reynolds Numbers, PhD (1978)

Thomas Friedrich Wilhelm Foerster
The Effect of Coal Char on the Corrosion of 304 SS, MS (1979)

JAMES ARTHUR TRAINHAM III, NATIONAL ACADEMY OF ENGINEERING
Flow-Through Porous Electrodes, PhD (1979)

RICHARD POLLARD (UNIVERSITY OF HOUSTON)
Mathematical Modeling of the Lithium-Aluminum, Iron Sulfide Battery, PhD (1979)

Clarence Garlan Law, Jr.
Corrosion of Iron, PhD (1980)

Peter Eugene Pierini
A Study of Ring and Ring-Disk Electrodes, PhD (1981)

Ellen Marie Pawlikowski
Vapor-Liquid Equilibria for Volatile, Weak Electrolytes in Aqueous Solutions, PhD (1981)

MARK EDWARD ORAZEM (UNIVERSITY OF FLORIDA)
Mathematical Modeling and Optimization of Liquid-Junction Photovoltaic Cells, PhD (1983)

Gary George Trost
Applications of Porous Electrodes to Metal-Ion Removal and the Design of Battery Systems, PhD (1983)

Timothy Kent Risch
The Transport Properties of Sodium Poly- sulfide Melts and a Theoretical Comparison of Flow-Through and Flow-By Porous Electrodes at the Limiting Current, MS (1983)

Alan Kent Hauser
The Corrosion of a Zinc Rotating Disk in One Molar Hydrochloric Acid, MS (1984)
Steady-State and Impedance Analyses of Electrochemical Kinetics and Mass Transfer, PhD (1989)

Philip Paul Russell
Corrosion of Iron: The Active-Passive Transition and Sustained Electrochemical Oscillations, PhD (1984)

MICHAEL JOHN MATLOSZ (INPL-ENSIC, NANCY-UNIVERSITÉ)
Experimental Methods and Software Tools for the Analysis of Electrochemical Systems, PhD (1985)

Susan Dale Thompson
Mass Transport in Sodium Polysulfide Melts, MS (1985)

Dawn Marie Bernardi
Mathematical Modeling of Lithium (alloy), Iron Sulfide Cells and the Electrochemical Precipitation of Nickel Hydroxide, PhD (1986)

Victoria Ann Edwards
Design of Thin-Gap Channel Flow Cells, PhD (1986)

Suresh Chand Jain
Kinetics of Sphalerite Activation, PhD (1987)

Chrystalla C. Haili
The Corrosion of Iron Rotating Hemispheres in 1 M Sulfuric Acid: An Electrochemical Impedance Study, MS (1987)

Gregg M. Sisler
Adsorption of Dilute-Aqueous Zinc Ions in the Electrical Double Layer of a Porous-Carbon Electrode, MS (1987)

Andrew A. Mason
Modeling and Optimization of Li-Alloy/Metal-Sulfide Molten Salt Batteries, MS (1988)

ALAN C. WEST (COLUMBIA UNIVERSITY)
Effects of Non-uniform Potential and Current Distributions in Electrochemical Systems, PhD (1989)

Paul Mark Shain
Cyclic Voltammetry at a Rotating Disk, Electroreduction of Nitrate in Acidic Nickel Solutions, and Frequency-Response Analysis of Porous Electrodes, PhD (1990)

Anthony Joseph Grabowski
Current and Potential Distributions on a Cylinder Electrode, MS (1990)

Mei-Hui Wang
The Electrical Conductivity of Sodium Polysulfide Melts, MS (1992)

THOMAS F. FULLER (GEORGIA INSTITUTE OF TECHNOLOGY)
Solid-polymer-electrolyte Fuel Cells, PhD (1992)

BAVANETHAN PILLAY (UNIVERSITY OF NATAL)
Development and Application of the Quasi-potential Transformation, MS (1992)
Design of Electrochemical Capacitors for Energy Storage, PhD (1996)

Vincent S. Battaglia
Current-Potential Characteristics of Electrochemical Systems, PhD (1993)

Douglas John Eames
Production of Chlorine from Anhydrous Hydrogen Chloride in a Solid-Polymer Electrolyte Cell, MS (1994)

Benjamin Mark Rush
Potentiostatic Current Oscillations in the Iron/Sulfuric Acid System, MS (1994)

Carolyn Renee Pals
Thermal Modeling of the Lithium/Polymer Battery, MS (1994)

C. Marc Doyle
Design and Simulation of Lithium Rechargeable Batteries, PhD (1995)

Blaine Kermit Paxton
Mathematical Modeling of the Nickel/Metal Hydride Battery System, MS (1995)

Chung-Pong Lau
Determination of Transference Numbers using the Galvanostatic-Polarization Method, MS (1996)

Gerhard Walter Matzen
Effect of Microscale Protrusions on Local Fluid Flow and Mass Transport in the Presence of Forced Convection, PhD (1997)

Elizabeth Nicole Swayne
Simultaneous Measurements of Conductance, Disjoining Pressure, and Thickness for Single Foam Films, MS (1997)

Kathryn Podolske Ta
Solid-State Diffusion-Coefficient Measurement and Modeling of Intercalation Materials, PhD (1997)

Craig Michael Gates
Equilibrium and Diffusion Measurements of Methanol and Water in a Perfluorosulfonic Acid Membrane, MS (1997)

Edward K. Yeh
Equilibrium Configurations of Liquid Droplets on Solid Surfaces under the Influence of Thin-Film Forces, MS (1998)

JEREMY PATRICK MEYERS (UNIVERSITY OF TEXAS-AUSTIN)
Simulation and Analysis of the Direct Methanol Fuel Cell, PhD (1998)

Robert Mason Darling
Lithium Manganese Oxide Spinel Electrodes, PhD (1998)

Christian Georg Fellner
High-Power Batteries for Use in Hybrid Vehicles, MS (1998)

Darryl Wayne Dunn
Modeling of Supercapacitors, MS (1999)

Divesh Bhatt
Influence of Deformation on (Drop-Bubble)-Solid Equilibrium Surface Forces, MS (2000)
Molecular Simulation of Disjoining Pressures, PhD (2004)

Robert Donald Villwock
Recovery of Chlorine from Waste Anhydrous Chloride by Means of an Electrochemical Membrane Reactor, PhD (2000)

Javit Ahmed Drake
Numerical Simulation of a Simons Gas-Liquid Electrochemical Flow Reactor: Cell Profiles, Multiple Steady States, and Transient Linear Stability, PhD (2000)

Hooman Hafezi
Characterization of Transport Phenomena in Polymer Electrolyte Systems, PhD (2002)

Karen Elizabeth Thomas
Characterization of Transport Phenomena in Polymer Electrolyte Systems, PhD (2002)

HEATHER DARYA YAROS (SKYLINE COLLEGE)
Evaluation of Derjaguin, Landau, Verwey, and Overbeck (DLVO) Theory with Disjoining-Pressure and Film-Conductance Measurements of Surfactant Stabilized Free Foam Films, PhD (2002)

DEAN RICHARD WHEELER (BRIGHAM YOUNG UNIVERSITY)
Molecular Simulation of Diffusion in Electrolytes, PhD (2002)

CHARLES MONROE (UNIVERSITY OF MICHIGAN)
Dendrite Initiation and Growth in Lithium/Polymer Systems, PhD (2004)

Adam Zev Weber
Modeling Water Management in Polymer-Electrolyte Fuel Cells, PhD (2004)

Jake Christensen
Failure Mechanisms in Lithium-ion Batteries, PhD (2005)

Sarah Stewart
Determination of Transport Properties and Optimization of Lithium-Ion Batteries, PhD (2007)

Jeremy Couts
Effects of Internal Cell Resistance and Constant Open-circuit Potential on the Effective Capacity of Hybrid Electric and Plug-in Hybrid Electric Vehicle Batteries, MS (2007)

Ryan Balliet
Water Movement in Non-operating Polymer-Electrolyte Membrane Fuel Cells at Temperatures Below 0 °C, MS (2007)

FACULTY MEMBERS IN THE ACADEMIC TREE

THOMAS W. CHAPMAN (UNIVERSITY OF WISCONSIN-MADISON)
REINALDO CABAN, UNIVERSITY OF PUERTO RICO
ALI ALTWAY, INSTITUT TEKNOLOGI SURABAYA, INDONESIA
SHI-CHERN YEN, NATIONAL TAIWAN UNIVERSITY

KEMAL NISANCIOGLU (NORWEGIAN UNIVERSITY OF SCIENCE AND TECHNOLOGY)
HÅVARD KAROLIUSSEN, SØR-TRØNDELAG UNIVERSITY COLLEGE

RALPH EDWARD WHITE (UNIVERSITY OF SOUTH CAROLINA)
JOHN VAN ZEE, UNIVERSITY OF SOUTH CAROLINA
TRUNG VAN NGUYEN, UNIVERSITY OF KANSAS
ERIC E. KALU, FLORIDA STATE UNIVERSITY
GAUTAM PILLAY, ROWAN UNIVERSITY
GERARDINE BOTTE, OHIO UNIVERSITY
VENKAT SUBRAMANIAN, TENNESSEE TECHNOLOGICAL UNIVERSITY

PETER S. FEDKIW (NORTH CAROLINA STATE UNIVERSITY)
JOSEPH MCGUIRE, OREGON STATE UNIVERSITY
JOHN WALTER WEIDNER, UNIVERSITY OF SOUTH CAROLINA
KHALED MOHAMED SABER ABDEL-HAMID YOUSSEF, NORTH CAROLINA STATE UNIVERSITY
FADHEL ABBAS AZEEZ, KUWAIT UNIVERSITY

JOSEPH MCGUIRE, OREGON STATE UNIVERSITY
PRASERT SUTTIPRASIT, PHITSANULOK UNIVERSITY, THAILAND
KAMAL AL-MALAH, JORDAN UNIVERSITY OF SCIENCE AND TECHNOLOGY, JORDAN
HAMOOD AL-MAKHLAFI, SANA'A UNIVERSITY, YEMEN
JACEK JACZYNSKI, WEST VIRGINIA UNIVERSITY, MORGANTOWN
WOO-KUL LEE, DANKOOK UNIVERSITY, SEOUL, SOUTH KOREA

JOHN WALTER WEIDNER, UNIVERSITY OF SOUTH CAROLINA
INAS AL-NASHEF, KING SAUD UNIVERSITY

ALAN C. WEST, COLUMBIA UNIVERSITY
SCOTT A. CALABRESE BARTON, MICHIGAN STATE UNIVERSITY
ROBERT G. BOZIC, US MILITARY ACADEMY

For complete academic tree and the current affiliations of Professor Newman's students, see **ELECTROCHEMICAL SOCIETY TRANSACTIONS, 16 (13), 1-22, 2008**. [doi: 10.1149/1.2987755]

ACKNOWLEDGEMENTS
The authors thank the organizers of the Tutorial Symposium on Electrochemical Engineering in Honor of Professor John Newman's 70th Birthday, 214th Meeting of the Electrochemical Society, for their encouragement and support for this article. The authors thank the College of Chemistry at the University of California-Berkeley all the faculty members for providing lists of their current and former students, without which this article could not have materialized.