RALPH E. SHOWALTER
BIOGRAPHICAL DATA

Education

Ph.D.	University of Illinois	1968
M.A.M.	North Carolina State University	1965
B.S.	North Carolina State University	1964

Professional Experience

Spring, 2017	ICES, University of Texas at Austin, J.T. Oden Faculty Fellow
9/2014	Acting Head, OSU Department of Mathematics
2004-07	Chair, OSU Department of Mathematics
2003—	Professor, Oregon State University
12/1994	Visiting Research Professor, Purdue University
1-5/1993	Visiting Professor, ICAM, VPI & State University
7/1990, 6/1991	Visiting Professor, Institut für Mathematik, Universität Augsburg
1982-83	Visiting Professor, Brown University
1978-2003	Professor, The University of Texas at Austin
1972-78	Associate Professor, University of Texas at Austin
1968-72	Assistant Professor, University of Texas at Austin
1965	Consultant, Corning Electronics

Professional Societies

Society for Industrial and Applied Mathematics (1968-current)
SIAM Activity Group on *Geosciences*
SIAM Activity Group on *Analysis of Partial Differential Equations*
American Mathematical Society (1967-2012)

Awards

1995—	Jane and Roland Blumberg Centennial Professor in Mathematics,
1992-1994	Joe B. and Louise Cook Professorship in Mathematics,
1992-1993	University Research Institute Faculty Research Assgn.
1982-1983	University Research Institute Faculty Research Assgn.
1965-1968	National Science Foundation Graduate Fellowship

PROFESSIONAL SERVICE

Editorial Board	Applicable Analysis, Advances in Mathematical Sciences and Applications, Communications in Applied Analysis, Electronic Journal of Differential Equations, Electronic Journal of Mathematical and Physical Sciences, International Journal of Differential Equations and Applications, International Journal of Mathematics and Mathematical Sciences, International Journal of Pure and Applied Mathematics, International Journal of Mathematical Analysis, Journal of Mathematical Analysis and Applications, Mathematical Methods in the Applied Sciences
Referee for	Advances in Mathematical Sciences and Applications, Applicable Analysis, Applied Mathematics and Computation, Applied Mathematics Letters, Archive for Rational Mechanics and Analysis, Boundary Value Problems, Canadian Journal of Mathematics, Communications in Applied Analysis, Communications in Partial Differential Equations, Computational Geosciences, Czechoslovak Mathematical Journal,

Differential and Integral Equations, Electronic Journal of Differential Equations, European Journal of Applied Mathematics, Fractals, Geophysical Journal International, Houston Journal of Mathematics, IEEE Transactions, Circuits and Systems, Illinois Journal of Mathematics, Indiana University Mathematics Journal, Israel Journal of Mathematics, Journal of Applied Mathematics, Journal of Applied Mechanics (ASME), Journal of Differential Equations, Journal of Evolution Equations, Journal of the Indian Mathematical Society, Journal of Mathematical Analysis and Applications, Journal of Mathematical Physics, Journal of Nonlinear Analysis, Journal of Theoretical Biology, Mathematical Methods in the Applied Sciences, Mathematische Nachrichten, Numerical Functional Analysis and Optimization, Pacific Journal of Mathematics, Proceedings of the American Mathematical Society, Proceedings of the Royal Society of Edinburgh, Quarterly Journal of Applied Mathematics, SIAM Journal on Applied Mathematics, SIAM Journal on Mathematical Analysis, SIAM Journal on Numerical Analysis, SIAM Journal on Control and Optimization, Transactions of the American Mathematical Society, Zeitschrift für Analysis und Anwendungen, Zeitschrift für Angewandte Mathematik und Mechanik,

Reviewer for Mathematical Reviews, SIAM Review, National Science Foundation, U.S. Army Research Office, Department of Energy, Natural Sciences and Engineering Research Council of Canada

Additional Professional Service

Member of Water Resources Graduate Program, OSU

Member of Review Panels, National Science Foundation

Organizer of *Northwest Consortium for Multiscale Mathematics and Applications*

Member of Scientific Committee, Conference on Differential and Integral Equations (DIEQ'99), Chelyabinsk, June 22-26, 1999.

Member of Scientific Committee, "Differential and Integral Equations, Mathematical Models" Chelyabinsk, February 4-11, 2002.

Panelist, Forward Looking Session, SIAM December 10-12, 2007.

Chair, External Review Committee, Colorado State University Department of Mathematics, 2009.

co-editor, Special Issue of Applicable Analysis, *Analysis and Approximation of Miscrostructure Models*, 2011.

Member of Scientific Committee, Laurier Centennial Conference: Applied Mathematics, Modeling and Computational Science - 2011, Waterloo, Ontario, Canada, July 25-29, 2011.

External Member of Dissertation Committee, Florian Maris, Worcester Polytechnic Institute, May, 2012

External Member of Doctorate Committee, Sören Dobberschütz, Universität Bremen, August, 2012.

Program Committee, "Degenerate Semigroups and Propagators of Sovolev Type Equations", International Symposium, Chelyabinsk, November 10-14, 2014.

External Member of Doctorate Committee, Martin Höpker, Universität Bremen, August, 2016.

Conferences Organized

1976 American Mathematical Society Special Session on PDE, Urbana, Illinois, March.

1977 (with J.T. Oden) National Science Foundation Workshop on Applications of Functional Analysis in Mechanics.

1978 Texas PDE Conference. (http://www.math.txstate.edu/research-conferences/hosted-conferences/txde.html)

1979 Texas PDE Conference.

1980	Texas PDE Conference.
1981	Texas PDE Conference.
1982	Texas PDE Conference.
1987	Texas-Oklahoma Section SIAM meeting (Austin)
	Texas PDE Conference.
1993	Special Session on "Distributed Systems for Flow in Aggregated Media" at the Conference on Differential Equations, Ohio University.
1994	Texas PDE Conference.
2000	Texas PDE Conference, Austin, TX.
2003	Minisymposium on 'Deformable Porous Media', I, II, III, SIAM Conference on Mathematical and Computational Issues in the Geosciences, Austin, March 17 - 20, 2003.
2004	(with Enrique Thomann and Roy Haggerty) SIAM Annual meeting, Portland, July 12 - 16. Special Session: Minisymposium on "Anomalous Diffusion in Porous Media"
2004	(with A. Miranville, Hong-ming Yin) American Institute of Mathematical Sciences' Fifth International Conference on Dynamical Systems and Differential Equations, California State Polytechnic University, Pomona, June 16 - 19: Mathematical Models and Methods in Phase Transitions
2005	(with A. Panchenko and Hong-ming Yin) American Mathematical Society, Eugene, November 12 - 13: Special Session on PDE and Applications.
2006	DOE Workshop on Multiscale Models of Materials: Mathematics and Computation, Tacoma, WA, May 25 - 30.
2007	(with Lynn Bennethum) SIAM Conference on Mathematical and Computational Issues in the Geosciences, Sante Fe, March 19 - 22, Special Session: Minisymposium on 'Flow and Deformation Processes in Porous Media', I, II
2007	(with M. Peszynska and S-Y. Yi) DoE and NSF sponsored Workshop, Corvallis, June 25-29, 'Modeling, Analysis and Simulation of Multiscale Nonlinear Systems' in cooperation with Society of Industrial and Applied Mathematics Activity Group on Geosciences.
2007	(with WSU, PNNL) DoE-sponsored Summer School in Multiscale Mathematics and HPC, Corvallis, OR, June 29 - July 3, 2007.
2008	(with Pacific Northwest National Lab) DoE-sponsored Summer School 'Multiscale Mathematics and HP Computing', Richland, WA, August 4 - 6, 2008.
2011	(with A. Muntean and M. Ptashnyk) SIAM Conference on Geosciences, Long Beach, March 24, Minisymposium on 'Microstructure Models-Analysis and Approximation Estimates'.
2013	(with M. Murad and X.F. Xu) Fifth Biot Conference on Poromechanics, Vienna University of Technology, July 10 - 12, Minisymposium on 'Multiscale and stochastic modeling in poromechanics'.
2017	Member of Organizing Committee, 2017 SIAM PNW Conference, Corvallis.
2017	(with Elaine Cozzi) SIAM PNW Conference, Corvallis, October 27 - 29, Thematic Session on 'Applied Analysis and Fluids'.
2018	(with Steve Bleier and Mau Nam Nguyen) co-organizer of 2018 Spring Sectional Meeting of American Mathematical Society, Portland.
2019	SIAM Conference on Geosciences, Houston, March 11-14, Minisymposium on 'Coupled Problems of Poromechanics', I, II.

2019 2017 SIAM PNW Conference, October 18 - 20, 2019, Seattle University,
co-organizer of Thematic Session on 'Fluid Mechanics, Systems & Models', I, II.

UNIVERSITY SERVICE

University Committees

1983-84 University Research Institute Awards Committee
1984-85 University Research Institute Awards Committee
1985-86 University Research Institute Awards Committee
1987-88 Dissertation Awards Committee
1991-92 CAMLS
Chair, Computational and Applied Mathematics
Graduate Program Planning
1992-93 Chair, Graduate Studies Committe,
Computational and Applied Mathematics
1993-94 Chair, Graduate Studies Committee,
Computational and Applied Mathematics
Search Committee for CAM Chair
1995-97 Computational and Applied Mathematics Program
Acting Subcommittee of the Graduate Studies Committee
Fellowships Committee
1995-96 Texas Institute for Computational and Applied Mathematics
Assistant Director and Member of Advisory Board
Search Committee for TICAM Chair
1996-97 Texas Institute for Computational and Applied Mathematics
Member of Advisory Board
Search Committee for TICAM Chair
2013-14 Memorial Resolution for Clifford Gardner (1924-2013),
The University of Texas at Austin

OREGON STATE UNIVERSITY

Spring 2008 Arts and Sciences Strategic Planning Committee

College Committees

1973-75 Undergraduate Curriculum Committee
1987-88 Review of Tenure Appointments
1988-89 Tenure and Promotion Committee
1989-90 Tenure and Promotion Committee
2002-03 Chair, Promotion and Tenure Triad

OREGON STATE UNIVERSITY

2003-04 College of Science Advisory Committee
2004-05 College of Science Promotion and Tenure Committee
2006-07 College of Science Promotion and Tenure Committee
2010-2011 College of Science Promotion and Tenure Committee
2011-2012 College of Science Promotion and Tenure Committee
2012-2013 College of Science Space Committee
College of Science Promotion and Tenure Committee
Fall 2013 College of Science Promotion and Tenure Committee (special)

Department of Mathematics Committees

1969-70	Chair, Undergraduate Curriculum Committee
1970-71	Chair, Undergraduate Curriculum Committee
1971-72	Chair, Undergraduate Curriculum Committee
1972-73	Chair, Undergraduate Curriculum Committee
1976-77	Chair, Recruiting Committee
	Tenure and Promotion Committee
1977-78	Chair, Recruiting Committee
	Tenure and Promotion Committee
1980-81	Promotion Triad
	Chair, Applied Math Prelim
1984-85	Subcommittee on Chairs
	Undergraduate Advising
1985-86	Subcommittee on Chairs
	Undergraduate Advising
1986-87	Subcommittee on Chairs
	Undergraduate Advising
	Analysis Preliminary Exam
1987-88	Raise Recommendations Committee
	B. A. Degree Committee
	Undergraduate Advising
	Subcommittee on Chairs
	Recruiting Committee
1988-89	Review Committee
	Subcommittee on Chairs
	Undergraduate Advising
1989-90	Subcommittee on Chairs
	Undergraduate Advising
	Raise Recommendations
	Chair, Graduate Studies Committee
1990-91	Subcommittee on Chairs
	Undergraduate Advising
	Raise Recommendations
	Chair, Graduate Studies Committee
1991-92	Subcommittee on Chairs
	Undergraduate Advising
	Chair, Graduate Studies Committee
	Chair, Textbook Selection, 427K
1992-93	Subcommittee on Chairs
	Undergraduate Advising
	Chair, Promotion Triad (Vishik)
1993-94	Subcommittee on Chairs
	Committee on Applied Mathematics
1994-97	Subcommittee on Chairs
	Committee on Applied Mathematics

	GSC: Applied Math. Prelim. Committee
1997-98	Committee on Applied Mathematics
	Undergraduate Course Development
	Undergraduate Preparation for Graduate Mathematics
1999-2000	Chair, Review Committee
	Post Tenure Review Committee
	Applicable Analysis Recruiting Committee
2000-2001	Faculty Review
	Post Tenure Review Committee
	Chair, Applied Math Prelim
	Chair, Promotion triad (Arbogast)
2001-2002	Assistant Prof Recruiting Committee
	Chair, Recruiting Committee
	Chair, Post Tenure Review Committee
	Chair, Long Range Planning
	Applied Math Prelim
2002-2003	Chair, Instructor Recruiting Committee
	Chair, Recruiting Committee
	Applied Math Prelim
	OREGON STATE UNIVERSITY
2003-04	Website Committee
	Teaching Committee
2004-2007	CHAIR of Department of Mathematics
2004-05	Website Committee
	Space Committee
2005-06	Space Committee
2007-2009	Advisory Committee
2007-2008	Chair, Hiring Plan Committee
	Budget Committee
2008-09	Chair, Qualifying Exam Committee
	Budget Committee
2009-2010	Graduate Committee (Fall)
	Chair, Qualifying Exam Committee
2010-2011	Qualifying Exam Committee
	Chair, Analysis Search Committee
	Applied Math Committee
	co-Chair, Dept. Chair Search Committee
2011-2012	Qualifying Exam Committee
	Math Education Search Committee
2012-2013	Qualifying Exam Committee
	Undergraduate Committee
	Chair, Faculty & PostDoc Review Committee
2013-2014	Chair, Qualifying Exam Committee
	Chair, Qualifying Exam Task Force
	Faculty & PostDoc Review Committee

	Search Committee for Department Head
2014-2015	Chair, Qualifying Exam Committee
	Search Committee for Department Head
2015-2016	Advisory Committee
	Chair, Qualifying Exam Committee (Fall)
2016-2017	Advisory Committee
	Teaching Committee
2017-2018	Advisory Committee
	Teaching Committee
2018-2019	Graduate Committee
	Media Committee
2019-2021	Graduate Committee

Activities in Student Affairs

1968-78	Faculty Advisor for U.T. Men's Gymnastics Club
1969-70	Undergraduate Advisor for Mathematics Majors
1979-82	Graduate Advisor for Department of Mathematics

Courses Taught

Course	***Title***
305G	Elementary Functions and Coordinate Geometry
408D	Calculus
311	Linear Algebra and Matrix Theory
427K	Advanced Calculus for Applications I
427L	Advanced Calculus for Applications II
361	Theory of Functions of a Complex Variable
665	Introduction to Analysis
370K	Intermediate Ordinary Differential Equations
676	Methods of Applied Mathematics
383D	Complex Analysis
391C	Fourier Analysis and Differential Equations
391C	Topological Vector Spaces and Distributions
391C	Nonlinear Partial Differential Equations
393C	Conference Course in Applied Mathematics
393C	Hilbert Space Methods for Partial Differential Equations
393C	Optimal Control of Distributed Systems
393C	Numerical Analysis: Finite Element Methods
393C	Elliptic Boundary Value Problems and Variational Inequalities
391C	Convex Analysis
393C	Evolution Equations and Variational Inequalities
393C	Introduction to Partial Differential Equations
393C	Semilinear Partial Differential Equations
383D	Methods of Applied Mathematics, II
	OREGON STATE UNIVERSITY
MTH 254	Vector Calculus
MTH 254H	Vector Calculus (Honors College)

MTH 256	Applied Differential Equations
MTH 256H	Applied Differential Equations (Honors College)
MTH 306	Matrix and Power Series Methods
MTH 306H	Matrix and Power Series Methods (Honors College)
MTH 311	Advanced Calculus
MTH 341	Linear Algebra, I
MTH 480	Dynamical Systems
MTH 511-513	Real Analysis
MTH 581-582	Mathematical Methods for Engineers & Scientists
MTH 607	Partial Differential Equations Seminar
MTH 607	Intro Research at OSU
MTH 607	Computational & Applied Mathematics Seminar
MTH 614	Functional Analysis
MTH 619	Topics in Analysis (Functional Analysis, II)
MTH 619	Topics in Analysis (Convex Analysis & PDEs)
MTH 621-623	Partial Differential Equations
MTH 627-628	Advanced Topics in Partial Differential Equations

GRADUATE STUDENT SUPERVISION

Ph.D. Degrees Supervised

Robert L. Dawes, May 1977, A degenerate evolution equation for fluid flow in multi-porous media
Martin M. Rooney, December 1977, Numerical analysis of nonlinear wave equations
Emanuelle DiBenedetto, August 1979, Implicit degenerate evolution equations
Kenneth L. Kuttler, December 1980, Degenerate evolution inequalities.
James Rulla, September, 1985, A Stefan Problem with prescribed convection, (awarded Best Dissertation Award by Graduate School).
Marie- Pascal Bosse, August, 1987, Homogenization of the layered medium equation.
Seth Oppenheimer, December, 1987, Dynamics of gas absorption.
Noel Walkington, May, 1988, Resolution of a diffusion problem arising in the flow of fluids.
Xingsheng Xu, August, 1988, The continuous dependence of solutions to a Cauchy problem
Gordon Clark, August 1992, Micro-structure modeling of fluid flow in layered media.
John Cook, August 1992, Diffusion models with microstructure and secondary flux.
Lindsay Packer, August 1992, The regularized layered medium equation.
Thomas Little, August 1993, Semilinear parabolic equations with Preisach Hysteresis.
Brook Hagood, August, 1994, Semilinear degenerate parabolic systems and distributed capacitance models.
Laura Lochhead, December, 1996, A coupled system of semilinear parabolic equations with hysteresis.
Hee Chul Pak, December, 1999, Two Distributed Capacitance Models.
Bahareh Momken, December, 2000, Fluid flow and Deformation in Composite Porous Media.
Darrin Visarraga, December, 2001, Heat Transport Models with Distributed Microstructure.
Fernando Morales, June, 2011, The Multiscale Analysis of Saturated Flow in Porous Media with an Adjacent Thin Channel.
Eleanor Holland, 2018, Poro-visco-elastic Compaction in Sedimentary Basins.
Alireza Hosseinkhan, 2022, The Biot System with Unilateral Displacement Constraints.

Membership on Ph.D. Committees

D. H. Eller (Electrical Engineering - Aggarwal), 1969

R. P. Rhoten (Electrical Engineering - Aggarwal), 1969
R. P. O'Donnell (Electrical Engineering - Aggarwal), 1971
W. P. Davis (Mathematics - Wall)
W. E. Hunt (Mathematics - Edmondsen)
H. Inabe (Aerospace Engineering - Tapley), 1972
E. Houston (Mathematics - McAdam), 1973
R. Ewing (Mathematics - Cannon), 1974
J. Gibson (Engineering Mechanics - Clark), 1975
R. Roure (Engineering Mechanics - Oden), 1975
L. Hayes (Mathematics - Young), 1977
J. Montemayor (Electrical Engineering - Womack)
C. T. Reddy (Engineering Mechanics - Oden), 1977
N. Kikuchi (Engineering Mechanics - Oden), 1977
S. Mochizuki (Engineering Mechanics - Oden), 1977
Jesse Walker (Mathematics - Gilbert), 1980
M-G. Sheu (Engineering Mechanics - Oden), 1978
Y. K. Kwon (Accounting), 1978
G. Alduncin (Engineering Mechanics - Oden), 1978
Mark Seager (Mathematics - Cantor), 1984
J. Wuu, 1984
T. Strouboulis (Engineering Mechanics - Oden), 1987
Joao Martins (Engineering Mechanics - Oden), 1984
John Morrison (Mathematics - Bichteler), 1985
Wayne Joubert (Mathematics - Young), 1989
J. M. Pearson (Mathematics - Beckner), 1989
John O'Leary (Engineering Mechanics - Clark)
J. K. Lee (Engineering Mechanics - Oden)
Paul Erickson (Engineering Mechanics - Clark)
Patrick Le Tallec (Engineering Mechanics - Oden), 1980
Thomas Kirkland (Electrical Engineering), 1985
Eduardo Pires (Engineering Mechanics - Oden)
Luis Campos (Engineering Mechanics - Oden)
S.-R. Wu (Engineering Mechanics - Oden)
Joao Martins (Engineering Mechanics - Oden)
Y.-J. Song (Engineering Mechanics - Oden)
Ricardo Kabrusly (Engineering Mechanics - Oden)
Johan Rade (Mathematics - Uhlenbeck), 1991
Reza Abbasian (Engineering Mechanics - Oden)
Nanda Gopal (Electrical Engineering)
Gary Berg (Mathematics-Odell), June, 1997
C-Y Lee (Engineering Mechanics - Oden), 1993
Si-Jian Lin (Mathematics-Bichteler)
Ioannis Gasparis (Mathematics-Rosenthall), December, 1995
J. R. Cho (Engineering Mechanics-Oden), December 1995
Y-H Chang (Electrical and Computer Engineering - Wise)
Robert Judd (Mathematics-Odell) August, 1997
Meelae Kim (Mathematics-Beckner), 1996
Nahwoo Hahm (Mathematics-Cheney), December, 1996
Tau Xu (CAM-Carey)

Tarek Zohdi (CAM-Oden), June, 1997
Klaus Gerdes (CAM-Demkowicz), December, 1996
Hongqiu Chen (Mathematics-Bona), August, 1998
Yuan, Juan-Ming (Mathematics - Bona)
Jiaosheng Jiang (Mathematics - Rosenthall)
Seoweon Jin (Mathematics - Beckner)
Katherine Socha (Mathematics - Bona)
Manas Deb (CAM - Oden)
Young Park (Mathematics - Beckner)
Henrik Kalisch (Mathematics - Bona)
Monica Torres (Mathematics - Caffarelli)
Dana Brunson (Mathematics - Arbogast)
Albert Romkes (CAM - Oden)
Ovidiu Savin (Mathematics - Caffarelli)
Brian Carnes (CAM - Carey)
Mario Gomez (Mathematics - Arbogast)
J. Ramirez (Mathematics - Thomann), 2007
M. Michalsen-Sapp (Civil Enging - Istok), 2005
C. Plengsaard (Mechanical Enging - Peterson),
C. Garibotti (Mathematics - Peszynska),
R. Kykyneshi (Mech Enging - Tate), 2007
H. Kim (Mathematics - Thomann), 2011
B. Iyob (Geosciences - Wolf), 2009
G. Saini (Env Enging - Wood), (current)
N. Webb (Mathematics - Bogley), 2011
K. Hickman (Mathematics - Finch), 2010
V. Klein (Mathematics - Peszynska), 2011
A. Monfared (MIME - Atre), 2011
Z. Gelbaum (Mathematics - Parks), 2013
Y.S. Chen (Civil Enging - Yeh), 2013
J. Barrett (Mathematics - Dray), 2014
P. Medina (Mathematics - Peszynska), 2014
P. Wongsason (Mathematics - Finch), 2014
R. Challa (Civil Enging - Yim), 2014
Shan Zhou (Economics - Rolf Färe) (current)
B. Sherson (Mathematics - Finch), 2015
M. Islam (Civil Enging -), (current)
Adriana Debora Piemonti (Civil Enging - Babbar-Sevens), 2015
Hussain Al-Hammali(Mathematics - Faridani), 2016
Azhar Alhammali (Mathematics - Peszynska), 2019
J. Umhoefer (Mathematics - Peszynska), 2019
Jhih-Jyun Zeng (Mathematics - Dascaliuc), 2020
Sarah Hagan (Mathematics - Dascaliuc), 2020
Choah Shin (Mathematics - Peszynska), (current)
Naren Vohra (Mathematics - Peszynska), (current)
Nachuan Zhang (Mathenatics - Peszynska), (current)
Hannah Barta (Mathematics - Cozzi), (current)

Master's Degrees Supervised

John R. McNeely, August 1969
Lonnie Brauner, Jr., June 1970
Yii-Ming Chen, June 1970
Steven R. Brooks, 1975
Kevin Holley, 1981
Cam Snyder, 1984
Carl Baribault, 1989
Christina Grieg, 1993
R-Sya Chen, 1995
Tim Povich, 2002.
Bernard Clark Musselman, August 2005
Fernando Morales, March, 2007
Dwight Holland, 2015
Alireza Hosseinkhan, 2018
Blaec Bejarano, 2020

Membership on Master's Committees

J. B. Micklethwait, 1970
T. A. Miller, 1973
R. Ewing, 1972
Joy Diamond, 1978
Myrick Crampton, 1987
Myron Davis, 1991
Nara Thacher, 1992
Anupan Netyanun (Mathematics - Solmon), 2004
K. Champley (Mathematics - Faridani), 2004
J. Ramirez (Mathematics - Thomann), 2004
S. Biederman (Mathematics - Peszynska),
R. Hass (Mathematics - Faridani), June, 2005
C. Garibotti (Mathematics - Peszynska), March 2007
C. Woodall (Mathematics - Peszynska), September 2008
J. Wilson (Wood Science Engng), September 2008
B. Scherson (Mathematics - Finch), 2011
Kelley Ruehl (MSME), June, 2011
J. Umhoefer (Mathematics - Peszynska), March 2016
Hannah Barta (Mathematics - Cozzi), 2020

RESEARCH IN PROGRESS

Singular or degenerate nonlinear evolution equations and systems of variational inequalities; related partial differential equations & systems. Initial-boundary-value problems of coupled mechanics and diffusion in heterogeneous media, design and analysis of multiscale models, transport and flow in deformable porous media.

RESEARCH SUPPORT

The UNIVERSITY of TEXAS at AUSTIN

1972-73	National Science Foundation
1975-77	National Science Foundation, MPS 75-07870, $15,600
1977-79	National Science Foundation, MCS 75-07870, $20,200
1980-82	National Science Foundation, MCS 80-02687, $25,496
1985-88	National Science Foundation, DMS 85-10660, $22,600

1988-90	Texas Advanced Research Program, #1886, $46,303
1990-91	Deutsche Forschungsgemeinschaft
1988-91	National Science Foundation, DMS 88-012664, $80,200
1988-91	Department of the Navy (with G. Carey, ASE/EM, N00014-89-J-1002),$168,676
1991-92	National Science Foundation, DMS-9103984, $17,567
1992-93	DOE Computational Science Graduate Science Fellowship Proposal
1992-94	National Science Foundation, DMS-9121743, $107,988
1993	University Research Institute Faculty Research Assignment
1995-00	National Science Foundation, DMS-9500920, $104,053
2002-2004	Texas Advanced Research Program, $50,000 Design and Analysis of Mathematical Models for Deformable Porous Media.
	OREGON STATE UNIVERSITY
2005 - 2008	Department of Energy, $2.6 M, PNNL, WSU, OSU Northwest Consortium for Multiscale Mathematics and Applications, Educational Strategies and Critical Problems in Thermo-mechanics of Materials (co-PI).
2007 - 2008	National Science Foundation, $27,634, OSU Modeling, Analysis, and Simulation of Multiscale Nonlinear systems: Workshop at OSU, (PI: Malgorzata Peszynska, co-PIs: Ralph Showalter, Son-Young Yi) Award Number 0707562
2005 - 2010	Department of Energy, $647,000, OSU Modeling, Analysis, and Simulation of Multiscale Preferential Flow, (PI: Ralph E. Showalter, co-PI: Malgorzata Peszynska).
Spring, 2017	ICES, University of Texas at Austin, J.T. Oden Faculty Fellow

Lectures Presented

Pseudo-parabolic partial differential equations, Conference on Qualitative Theory of Nonlinear Differential and Integral Equations, University of Wisconsin, August 12-23, 1968.

Partial differential equations of Sobolev-Galpern type, Seventy-Fifth Annual Meeting, American Mathematical Society, New Orleans, Louisiana, 1969.

Well-posed problems for a partial differential equation of order $2m + 1$, 653rd Meeting, American Mathematical Society, New York, 1970.

An abstract evolution equation with application to partial differential equations, colloquium lecture, University of South Carolina, April 23, 1970.

L^2-theory of elliptic boundary value problems, colloquium lecture, University of Texas at El Paso, May 8, 1970.

An abstract evolution equation with application to partial differential equations, colloquium lecture, University of Texas at El Paso, May 8, 1970.

Perturbation of generators of contraction semigroups, invited lecture, Second Annual October Meeting, University of Southwestern Louisiana, October 15-17, 1971.

Accretive operators and related topics, colloquium lecture, Georgetown University, Washington, D.C., November 5, 1971.

Quasi-reversibility of first and second order parabolic evolution equations, National Science Foundation Conference on Improperly Posed Problems in Partial Differential Equations, University of New Mexico, May 1974.

Regularization of partial differential equations, colloquium lecture, Texas A&M University, October 10, 1974.

Invited address, Special Session on Singular Cauchy Problems, 81st Annual Meeting, American Mathematical Society, Washington, D.C., 1975.

Integration of second-order evolution equations, colloquium lecture, University of Delaware, January 27, 1975.

Energy estimates for perturbations of evolution equations, invited address, 12th Annual Meeting of Society of Engineering Science, October 20-22, 1975.

Asymptotic behavior of a planetary circulation model, invited address, Seventh Annual University of Southwestern Louisiana Mathematics Conference, Lafayette, Louisiana, October 22-24, 1976.

Model equations for nonlinear dispersive systems, Symposium on Nonlinear Equations in Abstract Spaces, University of Texas at Arlington, June 8-10, 1977.

Special Session on Ill Posed Problems, 84th Annual Meeting, American Mathematical Society, Atlanta, Georgia, 1978.

An abstract Green's formula and applications, colloquium lecture, Georgetown University, Washington, D.C., April 4, 1978.

An abstract Green's formula and applications, colloquium lecture, University of Delaware, Newark, Delaware, April 6, 1978.

A Green's formula for weak solutions of variational problems, International Conference on Applied Nonlinear Analysis, University of Texas at Arlington, April 20-22, 1978.

Nonlinear evolution equations with singular or degenerate coefficients, invited lecture, National Science Foundation Conference on Nonlinear Functional Analysis and Partial Differential Equations, Colorado State University, August 21-25, 1978.

Stefan problems for two-temperature heat conduction, Texas Seminar on Differential Equations and Applications, Austin, March 10-11, 1979.

Quasi-reversibility of parabolic evolution systems, invited lecture, International Symposium on Ill-Posed Problems, Newark, Deleware, October 2-6, 1979.

Diffusion in nonhomogeneous media, Tenth Annual University of Southwestern Louisiana Mathematics Conference, Lafayette, Louisiana,
October 26-27, 1979.

Diffusion in heterogeneous media, colloquium lecture, Argonne National Laboratory, December 6, 1979.

Colloquium lecture, Indiana University, December 8, 1980.

Colloquium lecture, University of Illinois, December 11, 1980.

Invited speaker, International Conference on Dynamical Systems, Gainesville, Florida, February 1981.

International Conference on Spectral Theory of Differential Operators, March 1981, declined.

Invited speaker, International Workshop on Semigroups and Applications to Numerical Analysis, Norman, Oklahoma, May 1981.

Contributed talk, SIAM Summer Meeting, Albany, New York, June 1981.

Two one-hour talks by invitation, International Workshops on Nonlinear Functional Analysis and Applications, Berlin, September 1981.

Colloquium, Brown University, December 1981.

Colloquium, Virginia Polytechnic, December 1981.

Colloquium, North Carolina State University, December 1981.

Colloquium, University of Connecticut, September 29, 1982.

USL Meeting, October 1982 – declined.

Partial Differential Equations Seminar, Brown University, October 22, 1982.

Partial Differential Equations Seminar, Brown University, November 5, 1982.

Colloquium, University of Massachusetts, November 8, 1982.

Invited lecture, American Mathematical Society Meeting 798, Special Session on Nonlinear Partial Differential Equations, Baton Rouge, Louisiana, November 12-13, 1982.

Partial Differential Equations Seminar, Brown University, May 18, 1983.

Colloquium, University of Delaware, April 6, 1983.

Colloquium, Georgetown University, April 8, 1983.

Invited lecture, Conference on Physical Mathematics and Nonlinear Partial Differential Equations, Morgantown, W. Virginia, July 6-9, 1983.

Invited participant with support (declined), American Mathematical Society Summer Research Institute on Nonlinear Functional Analysis and Applications, Berkeley, California, 1983.

The parametric oscillator equation, invited lecture, American Mathematical Society Meeting #809, Special Session on Ill-Posed Problems, Lexington, Kentucky, January 25-28, 1984.

A hyper-parabolic equation, Texas Seminar on Partial Differential Equations, San Marcos, Texas, March 3, 1984.

Colloquium, Southwest Texas State University, San Marcos, Texas, March 23, 1984.

Cauchy problem for hyper-parabolic partial differential equations, invited speaker, International Conference on Nonlinear Partial Differential Equations, University of Texas, Arlington, Texas, June 1984.

Ten lectures on variational theory and approximation of boundary value problems, principal lecturer, Numerical Analysis Summer Program, sponsored by Science and Engineering Research Council of the United Kingdom, The University of Lancaster, July 15 to August 3, 1984.

Colloquium, Iowa State University, Ames, Iowa, October 2, 1984.

Nonlinear distributed RC networks, Texas Seminar on PDE, University of Houston, April 27, 1985.

Semi-state model of a distributed RC network, International Conference on Theory and Applications of Differential Equations, invited one hour talk, Pan American University, Edinburg, May 20-23, 1985.

Invited speaker, Seminar on Differential Equations in Banach Space, July, 1985, Bologna, Italy (declined).

Colloquium, Northwestern University, Evanston, Illinois, October 31, 1985.

Fissured medium equation and systems, invited speaker (45 minutes), SIAM meeting, Tulsa, Oklahoma, February 21-22, 1986.

Invited speaker, International Conference on Differential Equations and Mathematical Physics, Birmingham, March 3-8, 1986 (declined).

Stefan problem with memory, invited talk (20 minutes), AMS meeting, Denton, Texas, October 31, 1986.

The hyperbolic Stefan problem, invited speaker, NSF Workshop on Nonlinear PDE, Provo, March 3-7, 1987.

Colloquium, North Carolina State University, April, 1987.

The hyperbolic Stefan problem, International Colloquium on Free Boundary Problems, Bavaria, Germany, June 11-20, 1987.

Colloquium, Mississipi State University, Mississippi, November 19-20, 1987.

International Conference on Differential Equations, invited talk (1 hour), Columbus, Ohio, March 21-25, 1988.

Invited talk (90 minutes), Workshop on Nonlinear Analysis, University of Oklahoma, Norman, Oklahoma, March 28-April 1, 1988.

Dynamics of gas adsorption, Arizona State University, April 14, 1988.

A pseudo-conservation law, Texas Seminar on PDE, Texas A&M University, April 16, 1988.

Colloquium, Texas A&M University, February 3, 1989.

Colloquium, Utah State University, March 2, 1989.

Invited Speaker, Second Dublin Differential Equations Meeting, Dublin, May 22-25, 1989 (declined).

Survey Lecture, MicroStructure Models of Diffusion, International Conference on Mathematical Modeling for Porous Media, Bavaria, West Germany, May 15-20, 1989.

Invited Speaker, International Conference on Differential Equations: Theory and Applications in Stability and Control, Colorado Springs, June 7-10, 1989.
Invited Speaker, Dynamical Systems, Control Theory and Applications, Dayton, June 14-17, 1989 (declined).
Invited Talk in Special Session, SIAM Conference on Mathematical and Computational Issues in Geophysical Fluid and Solid Mechanics, Houston, September 25-28, 1989.
Diffusion Models with Microstructure, AMS Special Session by invitation, Muncie, IN, October 27, 1989.
Colloquium, University of Texas, El Paso, December 8, 1989.
Diffusion in a fissured medium with microstructure, Fifth International Colloquium on Free-Boundary Problems, Montreal, June, 1990.
Colloquium, Institute for Mathematics, University of Augsburg, FRG, July 30, 1990.
AMS Special Session on Convex Analysis, by invitation, Denton, Texas, November 2, 1990.
AMS Special Session on Differential Equations, by invitation, Denton, Texas, November 3, 1990.
Colloquium, Vanderbilt University, November 15, 1990.
Colloquium, Institute for Mathematics, University of Augsburg, Germany, June 27, 1991.
Colloquium, Carnegie-Mellon University, September 13, 1991.
Principal Speaker: SE-Atlantic Regional Conference on Differential Equations, Mississippi State Univ., October 25-26, 1991.
Colloquium, UC San Diego, February 20, 1992.
Texas PDE Conference, March 7-8, 1992.
1991-1992 Dean's Scholars' Freshman Lecture Series, March 12, 1992.
Colloquium, University of Houston, March 13, 1992, 'Parabolic PDE and boundary hysteresis'.
Mathematisches Forschungsinstitut Oberwolfach, Porous Media, June 21-27, 1992.
Principal Speaker, PDE Day, University of Toronto, July 31, 1992.
Invited Speaker (1 hour), Second International Colloquium on Numerical Analysis, Plovdiv, Bulgaria, August 13-17, 1992 (declined).
Midwest-Southeast Atlantic Conference on DE, University of Kentucky, Elliptic-parabolic equations with hysteresis, November 13-15, 1992.
Colloquium, Virginia Tech, February 26, 1993.
Colloquium, Georgetown University, March 26, 1993.
Secondary flux in partially fissured or layered media, SIAM Conference on Mathematics in Geosciences, Houston, April 19-21, 1993.
Lecture Series - Zakopane, Poland, May 23-30, 1993.
1. Diffusion Models and Microstructure
2. Distributed Microstructure Models of Porous Media
3. The Super-Stefan Free Boundary Problem
4. Parabolic PDE and Preisach Hysteresis

Parabolic PDE and Hysteresis, Seminar Lecture - Cracow, Poland, May 31, 1993.
The Super-Stefan Problem and Hysteresis, Expository Lecture, Conference on Differential Equations, Ohio University, August 3-7, 1993.
(with T. Little) The Super Stefan Problem, Special Session, AMS Mtg 886, College Station, Texas, October 23, 1993.
Colloquium, Vanderbilt University, November 11, 1993.
Colloquium, Ball State University, December 2, 1993.
Colloquium, University of Kentucky, December 3, 1993.
Seminar, Purdue University, December 7, 1993.
Colloquium, University of Arkansas, March 15, 1994.
Colloquium, University of Oklahoma, March 16, 1994.

University of Alberta: April 11-15, 1994, Applied Mathematics Institute Invited Lecture Series.

University of Strathclyde, July 25-29, 1994, Conference on Evolution Equations, Plenary lecture 'Elliptic-Parabolic Equations with Hysteresis'.

PDE Seminar, Purdue University, September 20, 1994, 'Elliptic-Parabolic Equations with Hysteresis'.

Colloquium, Oakland University, January 10, 1995, 'Parabolic PDE and Preisach Hysteresis'.

SIAM Conference on Mathematical and Computational Issues in Geosciences, February 8-10, 1995, San Antonio, Simulation of flow in partially fissured media.

Symposium on Advances and Trends in Computational and Applied Mathematics, Austin, April 20-22, 1995, 'Parabolic systems of PDE with hysteresis'.

Applied Math Seminar, Purdue University, April 28, 1995, 'Parabolic systems of PDE with hysteresis'.

Special Session on Optimization and Nonlinear Analysis, Joint AMS -Israel Mathematical Union Meeting, Jerusalem, May 24-26, 1995 -declined.

Free Boundary Problems, Zakopane, Poland, June 11-18, 1995, 'Implicit evolution equations and degenerate parabolic systems'.

Free Boundary Problems, Zakopane, Poland, June 11-18, 1995, Expository Lecture: Introduction to the Stefan Problem.

IFIP Conf. on Modelling and Optimization of Distributed Parameter Systems with applications to Engineering, Warsaw, July 17-21, 1995, 'Parabolic Systems with Hysteresis'.

Conference on 'Models of Hysteresis', June 25-29, 1996, Trento, Nonlinear semigroups and plasticity models.

Symposium on Computational Mechanics Advances in honor of Professor J. Tinsley Oden's 60th Birthday, January 13-15, 1997, Austin, Plasticity Models and Nonlinear Semigroups.

Invited Participant to Workshop on Issues in Plasticity, January 17-18, 1997, Austin.

Colloquium, Notre Dame, April 22, 1997.

Principal Speaker (4 lectures), Third Colloquium on Differential Equations, May 17-22, 1997, Maracaibo, Venezuela: Flow in Porous Media.

Plenary Speaker, New York Journal of Mathematics Conference, June 8 - 14, 1997, University at Albany, SUNY, Albany, NY: Partial Differential Equations with Hysteresis.

Colloquium, University of Southern California, Dec. 3, 1997. Elliptic-parabolic equations with hysteresis.

TICAM Seminar, April 14, 1998. Diffusion in Deformable Media.

Special Session, AMS Mtg #937, State College, PA, October 24-25, 1998. Biot Fissured Media.

Colloquium, University of Texas at San Antonio, January 22, 1999. Elliptic-parabolic equations with hysteresis.

Texas PDE, San Marcos, April 10, 1999. Diffusion in Poro-Elastic Media.

Colloquium, Mississippi State University, April 17, 1999. A transport model with adsorption hysteresis.

Special Session, Joint AMS # 944 -TexMex Meeting, May 19-22, 1999. Diffusion in Deformable Media.

Colloquium, Warsaw, Interdisciplinary Centre for Mathematical and Computational Modeling, June, 1999. Diffusion in Deformable Media.

Principal speaker, Conference on Differential and Integral Equations, June 22-26, 1999, Chelyabinsk, SU. (declined)

Colloquium, Carnegie-Mellon University, November 5, 1999. Diffusion in Deformable Media.

Invited Speaker in IMA Workshop on Resource Recovery, Feb. 9 -13, 2000, Minneapolis. Diffusion in Deformable Media.

Plenary Speaker, Conference on Differential Equations & Computational Mathematics, April 1-2, 2000, Georgia Southern University. Diffusion in Deformable Media.

Invited Speaker, Minisymposium on 'Singular differential-operator equations: theory,stability ,computing' at IMACS, 2000, August 21-25, 2000, Lausanne. (declined: no travel funds)

Invited Speaker, Minisymposium on Mathematical Modeling and Numerical Simulation of Subsurface and Surface Flow Problems, SIAM Annual Meeting 2000, July 10 - 14, 2000, Puerto Rico.

Invited Speaker, International Conference on Homogenization and Materials Science, September 15 - 17, 2000, University of Akron.

Colloquium, Vanderbilt University, March 19, 2001. Diffusion in Deformable Media.

Invited Speaker, Minisymposium on 'Modeling, Analysis and Simulation of Hysteresis and Irreversible Phenomena in Porous Media', Sixth SIAM Conference on Mathematical and Computational Issues in the Geosciences , June 11 - 14, 2001, Boulder, CO. Analysis of Flow in Porous Media with Hysteresis.

Invited Speaker, Minisymposium on 'Computational Modeling of Multi-Scale Processes in Deformable Porous Media' Sixth SIAM Conference on Mathematical and Computational Issues in the Geosciences , June 11 - 14, 2001, Boulder, CO. Deformable Composite Porous Media.

Texas PDE, San Antonio, February 2, 2002. Partially saturated flow in deformable media.

Plenary Speaker, Progress in Partial Differential Equations and Applications, Pacific Northwest PDE seminar series, Washington State University, May 23 - 25, 2002.

Invited Speaker, Second Biot Conference on Poromechanics, August 26 - 28, 2002, Grenoble.

Colorado State University Lecture Series, Fort Collins, January 29 - 31, 2003.

Minisymposium on 'Deformable Porous Media', SIAM Conference on Mathematical and Computational Issues in the Geosciences, Austin, March 17 - 20, 2003.

Oregon State University, Colloquium, April 3, 2003.

Invited Speaker, Conference on Control Theory for PDE, Georgetown University, Washington, May 30 - June 1, 2003

Hydrophiles Seminar, OSU, March 10, 2004, "Underground Mathematics."

WPI, Worcester, Colloquium, April 27, 2004, "The interface of a poroelastic medium with viscous fluid or elastic solid."

UO & OSU Joint Colloquium, June 1, 2004, "PDE's and Hysteresis."

Invited Speaker, American Iinstitute of Mathematical Sciences, Conference on Differential Equations and dynamical systems, Pomona, June 16-19, 2004, "The interface of a poroelastic medium with viscous fluid or elastic solid."

REU Lecture, OSU, July 7, 2004, "Hysteresis Models."

Society of Industrial & Applied Mathematics Annual Meeting, Special Session, July 12-16, 2004, "A Transport Model with Adsorption-Delay."

Invited Speaker, Dissipative Models in Phase Transitions, INdAM workshop, Cortona, Sept. 6-10, 2004, "Poroelastic filtration coupled to Stokes flow."

Istituto di Matematica Applicata e Tecnologie Informatiche, Seminario di Matematica Applicata, Pavia, Sept. 14, 2004, "Diffusion in deforming porous media."

Applied Mathematics & Computation Seminar - OSU, Oct.15, 2004, "Introduction to homogenization."

Applied Mathematics & Computation Seminar - OSU, Jan. 14, 2005, "Homogenization in models of flow in fractured media."

Physics Colloquium - OSU, January 31, 2005, "Hysteresis Models of Adsorption and Deformation."

Applied Mathematics & Computation Seminar - OSU, Feb. 4, 2005, "Introduction to poroelasticity."

Colloquium, Portland State University, February 18, 2005.

Applied Mathematics & Computation Seminar - OSU, April 1, 2005, "The Random Waltz Equation."

Vanderbilt University: BioMath Study Group Seminar, Nashville, TN, April 13, 2005.

Colloquium, University of Tennessee, Knoxville, TN, April 15, 2005.

Biot Conference on Poromechanics, Norman, OK, May 24 - 27, 2005, "Poro-Plastic Filtration Coupled to Stokes Flow."

Colloquium, University of Oklahoma, May 26, 2005.

Society of Industrial & Applied Mathematics GeoSciences, Avignon, June 7 - 10, 2005, "Multiscale Diffusion Models with Secondary Flux."

Applied Mathematics & Computation Seminar - OSU, Sep. 30, 2005, "Coupled Stokes and porous media flow."

November 12 - 13, 2005 Eugene, OR, Amer. Math. Soc. Meeting # 1012, "Poroplastic filtration coupled to Stokes Flow"

Applied Mathematics & Computation Seminar - OSU, May 5, 2006, "Hysteresis models of adsorption and deformation"

Colloquium, May 9, 2006 Seattle, WA, University of Washington, "Poroelastic filtration coupled to Stokes Flow"

Multiscale Modeling of Materials DOE Workshop, May 25 - 30, 2006 Tacoma, WA, "Homogenized Models of Flow in Heterogeneous Media".

Applied Mathematics & Computation Seminar - OSU, Sep 29, 2006, "Brinkman versus Darcy flow in porous media: modeling and analysis"

SIAM GeoSciences, Special Session, March 19 - 22, 2007, Sante Fe, "Brinkman-Darcy Models of Porous Media"

Workshop on Modeling, Analysis and Simulation of Multiscale Nonlinear Systems, June 25 - 29, 2007, Corvallis, OR, "Nonlocal models of transport in multiscale porous media",

Summer School in Multiscale Mathematics and HPC, June 29 - July 3, 2007, Corvallis, OR, "Multiscale Modeling of Preferential Flow"

9th US National Congress on Computational Mechanics July 23 - 26, 2007, San Francisco, CA, "Modeling preferential flow in subsurface"

The Annual Murray/Ollivier Lecture, Mississippi State University, November 16, 2007

SIAM Conference on Analysis of PDE, Minisymposium on Multiscale Phenomena in Material Sciences: "Darcy-Brinkman Models of Fast Channel Flow at an Interface"; Minisymposium on Analytical and Numerical Aspects of Fluid-Structure Interaction: "Multiscale Modeling of Preferential Flow", December 10 - 12, 2007, Phoenix, AZ,

Applied Mathematics & Computation Seminar - OSU, February 29, 2008, "A dam problem"

Pacific Northwest National Lab, NW Consortium for Multiscale Mathematics Summer School, August 4 - 6, 2008, "Homogenization of Multiscale Problems"

Applied Mathematics & Computation Seminar, October 3, 2008, "The Stefan Problem"

Scaling Up for Modeling Transport and Flow in Porous Media Plenary Lecture, October 13 - 16, 2008, Croatia, "Flow with dynamic capillary pressure over multiple scales"

Applied Mathematics & Computation Seminar, January 9, 2009, "The Super-Stefan Problem"

Applied Mathematics & Computation Seminar, January 30, 2009, "Homogenization of Pseudo-parabolic systems"

Institut Henri Poincaré: Nonlinear Evolution Equations, March 30 - April 1, 2009, Paris, "Homogenization of Pseudo-parabolic systems"

SIAM GeoSciences, June 15 - 18, 2009, Leipzig. Minisymposium on Modeling Flow in Porous Media with Fractures: "Preferential flow in fissure systems"; Minisymposium on Multiple Coupled Processes for Porous Materials: "Preferential flow and geomechanics".

November 16, 2009 Munich, Seminar, Technische Universitaet Muenchen, "Multiscale Modeling of Preferential Flow"

November 17, 2009 Munich, Seminar, Technische Universitaet Muenchen, "Deformation and Flow in Porous Media"

December 7 - 9, 2009, Miami, SIAM Conference on Analysis of PDE, Minisymposium on Mathematical and Numerical Models for Coupled Multiphysics Problems: "Filtration Into Deforming Porous Media"

February 24, 2010, Warsaw, Seminar, University of Warsaw, "A singular elliptic problem for channel flow"

March 4, 2010, Warsaw, Colloquium, University of Warsaw, "Coupled Systems of Darcy and Stokes"

April 21, 2010, Warsaw, Institute of Mathematics, Polish Academy of Sciences, Seminar, "Deformation and Flow in Porous Media"

April 29, 2010, Montpellier, Colloquium, "Deformation and Flow in Porous Media"

October 1, 2010, Applied Mathematics & Computation Seminar, "Variational Methods, I"

October 22, 2010, Applied Mathematics & Computation Seminar, "Variational Methods, II"

March 24, 2011, Long Beach, SIAM Conference on Geosciences, Minisymposium on Microstructure Models-Analysis and Approximation Estimates: "Homogenization of Pseudo-parabolic Systems"

April 1, 2011, Applied Mathematics & Computation Seminar "Flow systems in Mixed Formulation"

October 7, 2011, Applied Mathematics & Computation Seminar "Mixed Formulations of Coupled Systems of Mechanics and Diffusion"

November 16, 2011, San Diego, SIAM Conference on Analysis of PDE, Minisymposium on Partial Differential Equations for Non-linear Processes in Porous Media: "Nonlinear Systems in Mixed Formulation"

March 5, 2012, Analysis Seminar, "A Scalar Conservation Law with Hysteresis"

July 9 - 13, 2012, Minneapolis, SIAM Annual Meeting, Minisymposium on Coupled and Hybrid Models and Multiple Scales in Mathematical Geosciences: "Analysis of CO2-water Models"

October 5, 2012, Applied Mathematics & Computation Seminar "The General Porous Medium Equation"

November 26, 2012, Analysis Seminar "The General Porous Medium Equation"

April 5, 2013, Pittsburgh, Center for Nonlinear Analysis Seminar, Carnegie-Mellon University, "General Porous Medium Equation for Methane-Hydrates"

April 5, 2013, Pittsburgh, Colloquium, University of Pittsburgh, "Variational problems & Mixed Formulations"

May 9, 2013, Orlando, International Conference on Computational Analysis of Inverse Problems and Partial Differential Equations, University of Central Florida: "General Porous Medium Equation as a Multi-phase Methane-hydrate Model"

June 17 - 20, 2013, Padova, SIAM Conference on Geosciences, Minisymposium on Complementarity Problems for Flow in a Porous Medium: "Analysis and Numerical Approximation of Methane Hydrates Model"

November 10, 2014, Analysis Seminar "Semilinear PDEs and systems"

January 9, 2015, Applied Mathematics & Computation Seminar "Mathematical modeling of mechanics and geomechanics. I"

January 16, 2015, Applied Mathematics & Computation Seminar "Mathematical modeling of mechanics and geomechanics. II"

April 4, 2015, Portland, Cascade RAIN, "Consolidation Models"

April 21, 2015, Raleigh, Colloquium, North Carolina State University, "Evolution equations & Mixed Formulations"

April 30, 2015, Norman, Colloquium, University of Oklahoma, "Variational problems & Mixed Formulations"

May 22, 2015, Portland, Maseeh Colloquium, Portland State University, "Evolution equations and Mixed Formulations"

June 29 - July 2, 2015, Stanford, SIAM Conference on Geosciences, "Methane Transport in the Hydrate Zone"

December 7 - 10, 2015, Phoenix, SIAM Conference on Analysis of PDEs, "Porous Medium Equation with Heterogeneous Constraints and Advection"

April 11 - 15, 2016, Cambridge, Invited Speaker, Isaac Newton Institute Programme, Melt in the Mantle, "Multiscale Systems for Flow and Transport"

May 16 - 20, 2016, Nashville, invited 30 min presention in focus session at International Conference on Evolution Equations, "Single-phase flow in thermo-poroelasticity"

June 6 - 10, 2016, Cambridge, Invited Speaker, Isaac Newton Institute Programme, Melt in the Mantle, "Filtration Flow in Poro-Visco-Elastic Media"

November 10, 2016, Bergen, Seminar, University of Bergen, "Compaction and Flow Models from Geosciences"

November 29, 2016, Warsaw, Nonlinear Analysis Seminar, Interdisciplinary Centre for Mathematical and Computational Modeling, "Compaction and Flow Models from Geosciences"

February 20, 2017, Analysis Seminar, "Hysteresis, Adsorption and Consolidation"

March 2, 2017, Atlanta, SIAM Conference on Computational Science & Engineering, Minisymposium on New Approaches to Complex Coupled Multiscale Systems, "Consolidation of a Sedimentary Basin"

April 8, 2017, Vancouver, VC Cascade RAIN, "Consolidation of a Sedimentary Basin"

April 22 - 23, 2017 Pullman, AMS Sectional Meeting, Special Session on Partial Differential Equations and Applications, "Visco-Elastic Consolidation"

May 4, 2017, PNW SIAM Section Online Seminar, "A Pseudo-Parabolic PDE for Compaction of a Sedimentary Basin"

September 11-14, 2017, Erlangen SIAM Conference on Geosciences, "The Douglas School of Porous Media"

October 27-29, 2017, Corvallis SIAM Pacific North West Section Meeting, "The Darcy-Brinkman Reduced-Dimension Model of Fractures in Porous Media"

April 7, 2018, Portland, Cascade RAIN, "Displacement Constraints in Biot Systems"

April 15, 2018 Portland, AMS Sectional Meeting, Special Session on Modeling, Analysis, and Simulation of PDEs with Multiple Scales, Interfaces, and Coupled Phenomena, "Displacement Constraints in Biot Systems"

July 9-13, 2018, SIAM Annual, Portland, Minisymposium on Coupled Scales, Processes, and Data in Geosciences, "Two Phase Compaction of a Sedimentary Basin"

July 9-13, 2018, SIAM Annual, Portland, Minisymposium on Poromechanics and Multiphysics phenomena, "Displacement Constraints in Biot Systems"

July 29 - Aug 4, 2018, Banff International Research Station - Workshop, Oaxaca, Mexico, Numerical Analysis of Coupled and Multi-physics Problems with Dynamic Interfaces, "A Pseudo-Parabolic PDE for Compaction of a Sedimentary Basin"

March 11-14, 2019, Houston, SIAM Conference on Geosciences, Minisymposium on Coupled Problems of Poromechanics, "The Biot-Pressure System with Unilateral Constraints"

October 18 - 20, 2019, Seattle University, SIAM Pacific North West Section Meeting, "Filtration of Non-Newtonian Fluid in an Inelastic Medium"

November 18, 2019, Analysis Seminar, "Hysteresis Models of Adsorption and Deformation"

PUBLICATIONS

Books

(with R. W. Carroll) Singular and Degenerate Cauchy Problems, Academic Press, 1976.

Hilbert Space Methods in Partial Differential Equations, Monographs & Studies in Mathematics, Pitman Publishing, 1977, Electronic Monographs in Differential Equations (1994), http://ejde.math.swt.edu toc.html, and Dover Publications (2010).

Chapter in Book: Variational theory and approximation of boundary value problems, in Lecture Notes in Mathematics, #1129, Springer-Verlag, P. R. Turner (ed.), 1985, pp. 140-179.

Chapter in Book: Micro-structure models of porous Media, in 'Homogenization and Porous Media', Edited by Ulrich HORNUNG, Interdisciplinary Applied Mathematics Series, vol. 6, Springer, New York, 1996.

Monotone Operators in Banach Space and Nonlinear Partial Differential Equations, Mathematical Surveys and Monographs #49, American Mathematical Society, Providence, 1997.

Edited works

(with J. T. Oden) Workshop on Existence Theory in Nonlinear Elasticity, National Technical Information Service, 1977.

(with Alain Miranville and Hong-Ming Yin) Special Issue: 'Mathematical Problems in Phase Transitions', *Discrete and Continuous Dynamical Systems*, vol. 15, August, 2006, pp. 1017–1258.

(with M. Peszynska, A. Spagnuolo, N. Walkington) Special issue: 'Modeling, Analysis and Simulation of Multiscale Nonlinear Systems', *International Journal of Numerical Analysis and Modeling*, Vol. 5, Supp, 2008, pp. 1–170.

(with A. Muntean, M. Ptashnyk) Special Issue: 'Analysis and Approximation of Miscrostructure Models', *Applicable Analysis*, vol. 91, No. 6, June, 2012, pp. 1053–1054.

Articles

1. The solution of boundary-value problems in ordinary differential equations, Simulation, 5(1965), 374-380.
2. (with T. W. Ting) Pseudoparabolic partial differential equations, Advances in Differential and Integral Equations, Studies in Applied Math., 5(1969).
3. Partial differential equations of Sobolev-Galpern type, Pacific J. Math., 31(1969), 787-794.
4. (with T. W. Ting) Pseudo-parabolic partial differential equations, SIAM J. Math. Analysis, 1(1970), 1-26.
5. Local regularity of solutions of partial differential equations of Sobolev-Galpern type, Pacific J. Math., 34(1970), 781-787.
6. Well-posed problems for partial differential equations of order $2m + 1$, SIAM J. Math Analysis, 1(1970), 214-231.
7. (with T. W. Ting) Asymptotic behavior of solutions of pseudo-parabolic partial differential equations, Ann. Mat. Pura Appl. (IV), 90(1971), 241-258.
8. Weak solutions of nonlinear evolution equations of Sobolev-Galpern type, J. Differential Equations, 11(1972), 252-265.
9. Existence and representation theorems for a semilinear Sobolev equation in Banach space, SIAM J. Math. Analysis, 3(1972), 527-543.
10. Global perturbation of generators of semigroups, Proceedings of the Second Annual U.S.L. Mathematics Conference, University of Southwestern Louisiana, Lafayette, La., (1972).
11. Equations with operators forming a right angle, Pacific J. Math., 45(1973), 357-362.
12. Degenerate evolution equations, Indiana Univ. Math. J., 23(1974), 655-677.

13. Continuity of maximal monotone sets in Banach space,
Proc. Amer. Math. Soc., 42(1974), 543-546.
14. The final-value problem for evolution equations,
Jour. Math. Anal. Appl., 47(1974), 563-572.
15. A nonlinear parabolic-Sobolev equation,
Jour. Math. Anal. Appl., 50(1975), 183-190.
16. Nonlinear degenerate evolution equations and partial differential equations of mixed type,
SIAM J. Math. Analysis, 6(1975), 25-42.
17. A-priori error estimates for approximation of parabolic boundary value problems,
SIAM J. Numer. Anal., 12(1975), 456-463.
18. The Sobolev Equation, I,
Applicable Analysis, 5(1975), 15-22.
19. The Sobolev Equation, II,
Applicable Analysis, 5(1975), 81-99.
20. Energy estimates for perturbations of evolution equations, Proceedings of the Twelfth Annual Meeting of the Society for Engineering Science, (1975), 275-278.
21. Quasi-reversibility of first and second order parabolic evolution equations, Improperly Posed Boundary Value Problems, A. Carasso and A. P. Stone (eds.), Pitman Publishing, Carlton, (1975), 76-84.
22. Regularization and approximation of second order evolution equations,
SIAM J. Math. Anal., 7(1976), 461-472.
23. Asymptotic behavior of a planetary circulation model, Proceedings of the Seventh Annual U.S.L. Mathematics Conference, University of Southwestern Louisiana, Lafayette, La., 1976, 23-36.
24. Perturbation of maximal accretive operators with right angle,
Portugaliae Mathematica, 36(1977), 79-82.
25. Well-posed problems for some nonlinear dispersive waves,
J. Math. Pures et Appliquees, 56(1977), 123-135.
26. A Sobolev equation for long waves in nonlinear dispersive systems,
Applicable Analysis, 7(1978), 297-308.
27. (with J. Goldstein and C. Radin) Convergence rates of ergodic limits for semigroups and cosine functions,
Semigroup Forum, 16(1978), 89-95.
28. Model equations for nonlinear dispersive systems, Nonlinear Equations in Abstract Spaces, V. Lakshmikantham (ed.), Academic Press, New York, (1978), 327-329.
29. Degenerate parabolic initial-boundary value problems,
J. Diff. Eqs., 31(1979), 296-312.
30. Initial and final-value problems for degenerate parabolic evolution systems,
Indiana Univ. Math. J., 28(1979), 883-893.
31. A Green's formula for weak solutions of variational problems, Applied Nonlinear Analysis, V. Lakshmikantham (ed.), Academic Press, NY, (1979), 381-387.
32. Diffusion in heterogeneous media, Texas Institute for Computational Mechanics Technical Report #79-15, and Proceedings of the Tenth Annual U.S.L. Mathematics Conference, University of Southwestern Louisiana, Lafayette, Louisiana, (1979), 54-63.
33. Quasi-reversibility of parabolic evolution systems, Proceedings of the International Symposium on Ill-Posed Problems, Newark, Deleware, Z. Nashed (ed.), (1979).
34. Singular nonlinear evolution equations,
Rocky Mountain Math. J., 10(1980), 499-507.
35. (with E. DiBenedetto) Implicit degenerate evolution equations, Mathematical Research Center Technical Report #2099, Madison, Wisconsin, and

SIAM J. Math. Anal., 12(1981), 731-751.

36. Two Stefan problems for a degenerate parabolic system, Proceedings of the Second International Conference on Dynamical Systems, L. Cesari and A.R. Bednarek, (eds.), Gainesville, Florida, (1981), 367-374.
37. (with E. DiBenedetto) Pseudo-parabolic variational inequality and Stefan problem, Math. Res. Center Tech. Report #2100, Madison, Wisconsin, and
J. Nonlinear Analysis, 6(1982), 279-291.
38. Mathematical formulation of the Stefan problem,
Internat. J. Engrg. Sci., 20(1982), 909-912.
39. Degenerate nonlinear parabolic systems and free-boundary problems, Applied Nonlinear Functional Analysis, R. Gorenflo and K-H. Hoffman (ed.), Verlag Peter Lang, Frankfurt-Berlin, (1983), 289-300.
40. (with E. DiBenedetto) A free-boundary problem for a degenerate parabolic system,
Jour. Diff. Equations, 50(1983), 1-19.
41. The fissured medium equation, Lecture Notes in Pure and Applied Mathematics, Conference on Physical Mathematics and Nonlinear P.D.E., West Virginia University, Morgantown, Marcel-Deker, 1985, pp. 199-205.
42. A singular quasilinear diffusion equation in L1 ,
J. Math. Soc. Japan, 36(1984), 177-189.
43. Local regularity, boundary values and maximum principles for pseudoparabolic equations,
Applicable Analysis, 16(1983), 235-241.
44. (with M. Böhm) Diffusion in fissured media,
SIAM J. Math. Anal., 16(1985), 500-509.
45. Variational theory and approximation of boundary value problems, Lecture Notes in Mathematics, #1129, Springer-Verlag, P. R. Turner (ed.), 1985, pp. 140-179.
46. (with M. Böhm) A nonlinear pseudoparabolic diffusion equation,
SIAM J. Math. Anal., 16(1985), 980-999.
47. Cauchy problem for hyper-parabolic partial differential equations, North Holland MATH studies, #110, Trends in the Theory and Practice of Non-Linear Analysis, V. Lakshmikantham (ed.), 1985, pp. 421-425.
48. (with C. Snyder) A distributed RC network model with dielectric loss,
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