

RESUME

DEPARTMENT OF PHYSICS AND ASTRONOMY IOWA STATE UNIVERSITY

(September 2016)

NAME: JAMES WILLIAM EVANS

TITLE: PROFESSOR

**B BASE
GRAD. FACULTY - FULL**

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PERSONAL HISTORY (EDUCATION)

B.Sc. (1st Class Honors) - Mathematics (Physics minor) University of Melbourne, Australia 1975
Ph.D. - Mathematical Physics (advisor: H.S. Green) University of Adelaide, Australia 1979
Postdoctoral Fellow - Chemical Physics (advisor: D.K. Hoffman) Iowa State U/Ames Lab. 1979-1982

PERSONAL HISTORY (PROFESSIONAL EXPERIENCE)

2010-present Professor, Department of Physics & Astronomy, Iowa State University
1991-present Professor (1996-present), Associate Professor (1991-1996),
Department of Mathematics, Iowa State University
2008-present Professor of Physical Chemistry (Graduate Faculty), Iowa State University
1982-present Project Leader (2004-present); (Sr.) Faculty Scientist (1996-present); Chemist (1993-96),
Assoc. Physicist (1983-93), Assistant Chemist II (1982-83), Ames Laboratory – USDOE
2009 Visiting scientist IMA-UMN Minneapolis (March-May), IOP-CAS Beijing (June).
2000 Visiting Prof., Ecole des Mines/Univ. Henri Poincare Nancy I, France (Summer)
1991 Visiting Scientist, Fritz Haber Institut der MPG, Berlin, Germany (Summer)
1989-1991 Adjunct Associate Prof., Departments of Mathematics and Physics, Iowa State University

MEMBERSHIPS, HONORS, EDITORIAL BOARDS

Member, American Physical Society (APS)
Member, Society for Industrial and Applied Mathematics (SIAM)
Member, Materials Research Society (MRS)

Member, Editorial Board, Journal of Chemical Physics (American Institute of Physics) (2013 - 2015)
Member, Editorial Board, Computational Materials Science (Elsevier) (2014-present)
Member, Editorial Board, Surface Science (Elsevier) (2015-present)

Fellow, American Physical Society – Division of Condensed Matter Physics (2002-present)

American Physical Society (APS) Outstanding Referee 2015

PERFORMANCE IN TEACHING POSITION RESPONSIBILITIES

STATEMENT OF TEACHING PHILOSOPHY

My courses have primarily involved teaching mathematical methods, and theory and modeling strategies for physical systems to audiences of students from a diverse range of disciplines. Specifically, most students have come from physics, chemistry, and various engineering disciplines. My guiding philosophy has been to present the material in a way targeted to the audience (e.g., avoiding unnecessarily abstract and rigorous derivations or proofs in math courses), and wherever possible selecting examples and applications from the students' fields of interest. However, I do aim to provide the students with a complete and solid understanding of the mathematical and theoretical concepts and results, including a self-contained set of lecture notes and supplementary material available on the web. This solid understanding is important in an era where computational modeling is common in applied disciplines, particularly with the aid of "black box" software, but where students' understanding of the underlying theory and mathematical formulations is often incomplete. Input from and interaction with the students during class is encouraged as this invariably provides insight into the student's level of understanding of the material. Such interaction not only enhances learning, but also guides discussion towards topics or issues of particular interest to the students.

Evaluation of students in these courses is based primarily on their performance in closed-book exams (2 or 3 exams during the semester, as well as a comprehensive final). The relative weight of these exams etc., towards the final grade is announced at the beginning of the semester. The exams include questions based primarily on lecture materials and associated homework, so that typical students if diligent should be able to perform reasonably. A sufficient number of questions are included so that failure to answer one question will not severely impact the overall grade on the exam. To challenge stronger students, usually at least one more difficult question is included in each exam.

LIST COURSES TAUGHT IN LAST FIVE YEARS, USING A TABULAR FORMAT.

Assignments Sem & Yr	Course	Title	Approx. No. Students
Spring 2016	Phys 646	Math Modeling of Complex Phys Sys	7
Spring 2016	Phys 490	Independent study: Stochastic Spatial Processes	1
Fall 2015	Phys 528	Math Methods Phys Sciences	25
Spring 2015	Phys/Math 646	Math Model Complex Phys Sys	5
Fall 2014	Phys 528X	Math Methods Phys Sciences	22
Spring 2014	Phys 646	Math Model Complex Phys Sys	11
Spring 2014	Phys 242 (1/H1) Rec	Classical Phys II (H/LC)	19
Spring 2014	Phys 242 (2/H2) Rec	Classical Phys II (H/LC)	14
Fall 2013	Phys 528X	Math Methods Phys Sciences	18
Spring 2013	Phys 646	Modeling of Cx Physical Systems	12
Fall 2012	Phys 528X	Advanced Math Methods for Physics	23
Spring 2012	Phys 646	Modeling of Cx Physical Systems	18
Fall 2011	Phys 426	Mathematical Methods for the Physical Sciences	25
Spring 2011	Math 646	Math Modeling of...Complex Systems	6
Fall 2010	Math 426	Math Methods for Physical Sciences	21
Spring 2010	Math 646	Math Modeling of...Complex Systems	19
Fall 2009	Math 426	Math Methods for Physical Sciences	28
Spring 2009	----	Faculty Prof. Development Activity	--
Fall 2008	Math 426	Math Methods for Physical Sciences	23
Spring 2008	Math 646	Math Modeling of...Complex Systems	11
Fall 2007	Math 426	Math Methods for Physical Systems	20
Spring 2007	Math 690W	Probability & Stochastic Processes	1

SUMMARIZE RESULTS OF STUDENT EVALUATIONS FOR ALL COURSES IN THE LAST FIVE YEARS ON THE TWO STANDARD QUESTIONS.

sem/Yr	Course	Sect	Type	Students		Instructor		Course	
				Total Enrolled	% Responded	Overall Rating	Dept Mean for like Instructors	Overall Rating	Dept Mean for like Courses
S16	646		Lec	7	100	4.6	4.6	4.3	4.4
F15	528		Lec	25	76	4.7	4.4	4.5	4.4
S15	646		Lec	5	80	4.8	4.6	4.3	4.4
F14	528		Lec	22	82	4.9	4.4	4.8	4.4
S14	646		Lec	11	73	5	4.1	4.8	4
S14	242	1/H1	Rec	19	58	3.8	3.9	2.9	3.3
S14	242	2/H2	Rec	14	57	4	3.9	3.9	3.3
F13	528X		Lec	18	72	4.3	4.2	4	4.2
S13	646		Lec	12	67	4.9	4.2	4.6	3.9
F12	528		Lec	23	83	4.5	4.3	4.1	4.1
S12	646		Lec	18	78	4.7	4.3	4.6	4.1
F11	426		Lec	26	85	4.5	4.1	4.2	3.9
S11	646		Lec	6	67	4.5		4.3	
F10	426		Lec	21	71	4.5		4.3	
S10	646		Lec	19	89	4.6		4.5	
F09	426		Lec	28	89	4.6		4.1	
F08	426		Lec	23	83	4.7		4.2	
S08	646		Lec	11	69	4.8		4.1	
F07	426		Lec	20	85	4.3		4.2	

COURSE AND CURRICULUM DEVELOPMENT ACTIVITY

Phys/Math 646: Mathematical Modeling of Complex Physical Systems (formerly Math 527). This graduate course was developed to cover the broad spectrum of approaches to modeling of the dynamics of complex physical systems: classical or molecular dynamics; stochastic models and Monte Carlo methods; coarse-grained/macroscale models. This course was designed to meet the interests and key research needs of graduate students in the mathematical, physical, and chemical sciences, and increasingly in various engineering disciplines. It focuses on mathematical theory/formalism underlying the modeling strategies – rather than on code implementation (the focus of other courses) – given that the former is key to reliable analysis. Course material is necessarily drawn from numerous sources, but the presentation is a self-contained, and is accessible to students with various backgrounds (a significant challenge as students come from up to 8 programs in a given year). There has been sufficient interest to run the course every year that it has been offered, most of whom have come from departments other than my own. I believe that this reflects well on the value of the course to a broad clientele (as appreciated by students & faculty).

Phys 528X: (Advanced) Mathematical Methods for the Physical Sciences. This course was developed and offered for the first time in Fall 2012 after extensive discussions with the Physics Curriculum Committee in Spring 2012. The philosophy was to significantly “enhance” the lower level course Math/Phys 426 to cover key additional topics of relevance to the Graduate Physics Core Curriculum (Hilbert spaces, linear operators, more emphasis on ODE’s and PDE’s central to physics, etc.), as well as to increase the level of difficulty of the material. Thus the content and level of presentation in 528 differs greatly from 426.

UNDERGRADUATE ADVISING.

a. Average number of advisees per year since appointment 3. Current number per year 6

NSF REU Undergraduate Trainees:

Kasey Mathess 2002; Bethany Weinert 2003; Daniel Unruh 2004 (now a postdoc); Kyle Schnitzenbaumer 2005-6 (now in graduate school), Kyle Mandsager 2007 (now in medical school).

Ames Laboratory USDOE Undergraduate Research Trainees - SULI program:

John A. Bartz 1986; J.A. Rabaey 1988; Mark S. Miesch 1990 (now an NCAR Scientist); Mel Sabella 1992; Joey Wendel 2010

GRADUATE ADVISING

A. PH.D. PROGRAM OF STUDY COMMITTEES (SINCE APPOINTMENT in 1991)

1. In progress (# = number of publications)

- **Chair/major professor**

Andres Garcia (PhysA 2013 – present # = 3), Lai (Alex) King (PhysA 2015-present)

- **Member of committee**

Dante Quirinale (Phys Goldman)
Joani Mato (Chem Gordon)
Jared Delmar (Phys. Yu)
Holly Walen (Chem. Thiel)
Steve Noren (AMath)
Eric Murphy (ME)

Tsung-Han Chou (Phys Yu)
Miles White (Chem. Vela)
Santosh Shaw (PhD MSE Cademarti)
Emma Kwolek (Chem. Thiel)
Kai-Chung Lau (Chem)
Lee Trask (ChemE Cochran)

Yingzhou Du (Phys McQueeney)	JinFang Cui (Phys Y Furakawa)
Chen Liu (PhD KM Ho)	Han Quan Phoon (PhysA HE Valencia)
Brian Voas (PhD MSE Beckman)	A Nashleanas (Chem, Windus)
Zach Voller (AMath)	Peter Spurgeon (Chem Thiel)
William Everett (Ph.D. Chem Windus)	Jiyoung Lee (Chem Windus)
Yi-Ann Lii (Chem Thiel)	Zhuoran Wang (Chem)

2. Completed (# = number of coauthored publications):

- **Chair/major professor (name, degree, date, # publications, current employer)**

Timothy R. Ray (Ph.D., Applied Math; 1991-1994 # = 2) - SE Missouri State U./NSA
 Michael Tamaro (Ph.D., Physics-CMP; 1993-1997 # = 8) – U. Rhode Island
 Edna W. James (Ph. D., Applied Math; 1998-1999 # = 4) – Algoma U., Canada
 Kyle J. Caspersen (Ph.D, Chem; 1999-2001 # = 11) – Lawrence Livermore NL
 Marvin Albao (Ph.D., Physics-CMP; 2001-2006 # = 8) – U. Philippines Los Banos
 Xiaofang Guo (Ph.D. Physics-CMP/Applied Math 2004-2008 # = 7) – I-Behavior
 David Ackerman (Ph.D. Chem. 2008-2013 # = 11) – postdoc ISU MechE
 Chi-Jen Wang (Applied Math 2009-2013 # = 5) – postdoc Georgia Tech Math
 Jing Wang (Applied Math 2010-2013 # = 7) – postdoc ISU Math, quant. Amer. Inst. Res.

- **Member of committee**

T. Windus (Chem. 1992-93); T. L. Pe (Phys. 1994-97); J. Jensen (Chem. 1992-96)
 N. Kiet (Chem. 1992-94); B. Diesslin (Math. 1993-94); A. Abd El-Hady (Phys. 1993-98)
 G.-L. Zhao (Phys. 1993); C. Kelchner (Chem. 1996); D. Koutoudis (Phys. 1993-98);
 J. Partee (Phys. 1993-97); J. McDonald (Phys. 1995-97); M. Toutounji (Chem. 1995-98)
 K. Stanley (Phys. 1996-97); R. Campero (ChemE; 96-98); K. Glaesemann (Chem.95-98);
 N. Kumar (ChemE. 1996-98); D. Federov (Chem. 1996-99); T.G. Konshak (Chem. 95-05)
 C. Stoldt (Chem. 1997-99); V. Glezakou (Chem.; 1999-2000); Y. Zhang (Phys. 1995-)
 X. Wang (Phys. 1995-); X. Jiang (Phys. 1999-2001); C. Song (Phys. 1998-2001)
 X. Zhu (ChemE, 1998-2001); T. Layson (Chem. 1998-2001); M. Freitag (Chem. 98-2002)
 M. Pak (Chem. 1997-2002); R. Huang (ChemE. 1998-2003); F.-C. Chuang (Phys. 00-03)
 V. Yeh (Phys. 2000-2003); I. Adamovic (Chem. 2000-04); I. Rousochatzakis (Phys. 2003-)
 M. Matsuzuki (Chem. 2002-04); S. Wu (Phys. 2001-05); C. Aitkens (Chem. 2001-05);
 J. Bentz (Chem. 2002-05); S. Varangov (Chem, 2001-07); M. Pai (ME 2006-07 +AMath);
 B. Njegic (Chem. 2005-08); D. Zorn (Chem. 2005-08); N. Suek (ChemE, 2005-08);
 X. Xie (Math 2006-08); K.C. Lau (Chem.; 2000-); Erning Zhang (Chem. 2000-);
 Cihan Erbas (EECP/E/AMath 06-09); M. Shen (Chem 2005-); P. Arora (Chem. 2005-);
 J. Rintelman (Chem. 1999-2004); T.-Z. Chan (Phys. 2005); Jun Li (Phys. 2010-);
 A. Smith (Chem. 20xx-); Hui Xie (NDE-EE 20xx-); Luke Roskop (Chem. MSG 20xx-);
 J. Hausser (ChemE 20xx-); Z. Royer (MSE 2012-); Alex Belankinov (Chem 2012-);
 Sean Nedd (Chem. Gordon 2012-); C. Yuen (Chem. Thiel 13-); Hui Yu (AMath Liu 2013)
 K. Lord (MSE King 2013); S. Russell (Chem Thiel 2013); D. Appy (Chem Thiel -2014);
 K. Knorowski (Phys. AT -2015); R. Grandin (ME-NDE -14); B. Estervig (Math Sacks -15);
 R. Gustav (Phys. Goldman -2014); J. Liao (Phys HEP -2014); S. Liu (AMath MT -2011);
 D. Shao (Chem. Thiel -2014); J. Zhang (Phys -2010); F. Wei (Phys. NPhys -2010);
 Dapeng Jing (Chem Thiel -10); G-A Negoita (Phys Vary -10); S. Alvarado (Chem Vela -15)
 Xin Zhao (Phys -2015); Wenjia Liu (Phys. Schmittman -14); Jizhou Chen (Phys Tringides)
 Jian Zhang (Phys Ho); Xiao Ma (Ph.D. ME); Zhao Xia (Phys A KM Ho)
 Hong Zhang (Ph.D. Physics Qui); Eric Smith (PhD ME Subramanian)

B. M.S./M.A. PROGRAM OF STUDY COMMITTEES (SINCE APPOINTMENT)

1. In progress:

- Chair/major professor (list names of students)
- Member of committee (list names of students)

Completed:

- **Chair/major professor**

C. J. Westermeyer (M.Sc., Math; 1994-1995)

Renjie Zhao (M.Sc. Phys. 2012-2014)

- **Member of committee (list names of students)**

J. M. Fastenau (EE; 1992-93); B. Kelly (Phys. 1992-93); R. Formas (Phys. 1992-93);
D. Beal (Phys. 1993); M. Ifti (Phys. 1997); A. Hoover (Math. 1998-99);
F. Wilmore (ChemE. 1995); N. Sinha (ChemE 1998-); F. N. Sheikh (ChemE; 1996)
J. Poock (Chem. 1999-2001); E. Simsek (MS&E 1998-?); Eun-Yon Kim (Math, 2002-);
M. Matsuzuki (Chem. 2002); B. Olson (Math. 1998-); Geoff Root (PhysA 2013);
Y. Jung (M.Sc. Chem, 2001); F.-C. Chuang (Phys 05); H. Zhang (Phys -2010);
A. Severein (AMath -2009); J. Knutson (AMath -2011)

C. SUPERVISION OF POSTDOCTORAL FELLOWS AND STAFF SCIENTISTS

Postdocs (name, PhD degree, dates at ISU, # publications at ISU, current employer)

Current:

Former:

Dr. Jing Wang (Ph.D ISU 2013) 2013-2014 # = 7 Quantitative Analyst American Inst Research (AIR)
Dr. Chi-Jen Wang (Ph.D. ISU 2013) 2013-2014 # = 5 Postdoc, Georgia Tech Mathematics
Dr. Yong Han (Ph.D Utah 2006) 2007-2010 # >17 Staff Scientist, Physics & Astronomy ISU.
Dr. Maozhi Li (Ph.D.CAS-Beijing 2001) 2001-2005 # = 13 Assoc. Prof. Physics Renmin U., Beijing
Dr. Chandana Ghosh (Ph.D. KSU 2004) 2004-2005 # = 4 Postdoc CFU, now scientist @ Siemens.
Dr. Da-Jiang Liu (Ph.D. U Maryland 1998) 1998-2001 # > 40 Staff Scientist, Ames Laboratory/ISU
Dr. A. M. Cadilhe (Ph.D. Clarkson 1997) 1997-1999 # = 4 U. do Minho/LANL/U Fed. De Minas Gerias
Dr. Maria C. Bartelt (Ph.D. Clarkson 1991) 1991-1996 # = 23 Deceased. Formerly Scientific Capability
Leader/Director of Computational Materials Sci., CMS Lawrence Livermore NL – USDOE
Dr. H. Chuan Kang (Ph.D. Caltech 1990) 1990-1991 # = 6 Assoc. Prof. Chemistry, National U. Singapore

Staff Scientists (name, PhD degree, dates at ISU, # publications at ISU)

Current:

Dr. Da-Jiang Liu (Ph.D. U Maryland 1998) 2001-present # > 44 Assoc. Scientist Ames Lab. DCBS

Dr. Yong Han (Ph.D Utah 2006) 2011-present # >17 Asst. Scientist IPRT

HONORS AND AWARDS RECEIVED FOR TEACHING

Outstanding Faculty Instructor for 1992/93: ISU Physics Graduate Student Assoc. Award

SERVICE

DEPARTMENTAL

Member: Modern Qualifier committee (PhysA) 2016
Member: Curriculum Committee (PhysA) 2015-2016
Member: Graduate Committee (PhysA) 2015-2016
Member: Undergraduate advising group (PhysA) 2015-2016
Member: Classical Qualifier regrading committee (PhysA) 2015-2016
Representative: Faculty Senate (for PhysA) 2015-2016
Chair: Hiring committee for Mesoscale Science (PhysA) 2014-2015
Member: Hiring committee for Mesoscale Science (Chemistry) 2014-2015
Chair: Focus Area Committee (FAC) for hiring in mesoscale science
Member: Graduate Committee (PhysA) 2014-2015
Member: Undergraduate advising group (PhysA) 2014-2015
Representative: Faculty Senate (for PhysA) 2014-2015
Member: Promotion and Tenure Committee (PhysA) 2013-2014
Member: Graduate Committee (PhysA) 2013-2014
Member: Undergraduate advising group (PhysA) 2013-2014
Member: Promotion and Tenure Committee for Matzavinos (Math) 2013-2014
Inspector General- Physics Qualifiers (PhysA) 2013-2014
Member: Undergraduate advising group (PhysA) 2012-2013
Member: Graduate Committee (PhysA) 2012-2013
Member: Promotion and Tenure Committee (PhysA) 2012-2013
Member: Promotion and Tenure Committee for Matzavinos (Math) 2012-2013
Member: Modern Qualifier Committee (PhysA) 2012-2013
Member: Graduate Committee (PhysA) 2011-2012
Member: 3 year review committee for A Matzavinos (Math) 2010-2011
Member: Committee for Combinatorics/Computational Math Search (Math) 2009-2010
Member of the Tenured Faculty Review Committee (Math) 2009-2010
Member: Graduate Committee (Math) Fall 2008
Member: Wolfe Award Committee (Math) Fall 2008
Member of the Tenured Faculty Review Committee (Math) 2008-2009
Member of the IRT for promotion of D. D'Alessandro (Math) 2008-2009
Member of the IRT for promotion of S. Sethuraman (Math) 2007-2008
Member of the Tenured Faculty Review Committee (Math) 2007-2008
Chair of the IRT for promotion of H. Liu (Math) 2006-2007
Self-study Coordinator for Numerics, Control, and Modeling Research Group (Math) 2006-2007
Member Computational Applied Mathematics Search Committee (Math) 2005-2006
Member of the Tenured Faculty Review Committee (Math) 2005-2006
Member Mathematics Dept. DEO Advisory Committee (Math) 2004-2005
Member of the IRT for tenure of H. Liu (Math) 2004-2005
Member of the Tenured Faculty Review Committee (Math) 2004-2005
Member Mathematics Dept. DEO Advisory Committee (Math) 2003-2004
Member Computational & Applied Math Search Committee – cancelled (Math) 2003-2004
Member Applied Mathematics Search Committee (Math) 2002-2003
Member of Search Committee in Condensed Matter Theory (PhysA) 2001-2002.
Chair of the Individual Review Team (IRT) for Untenured Professors (Math) 2001-2002.
Chair of Hiring Committee for the Probability & Stochastic Processes Search (Math) 2001-2002.
Chair of the IRT for Untenured Professors (Math) 2000-2001.

Member of the IRT for tenure and promotion of X. Wang (Math) 2000-2001.
Member of the Individual Review Team (IRT) for Assistant Professors (Math) 1999-2000.
Member of the IRT for promotion of S. Hou (Math) 1999-2000.
Chair of the IRT for Associate Professors (Math) 1998-99.
Member of the Search Committee for an Applied Mathematics Faculty Hire (Math) 1998-99.
Member of IRT for promotion of Q. Du (Math) 1998-99.
Mentor for Assistant Professor Timo Seppalainen (Math) 1996-98.
Member of the IRT for Associate Professors (Math) 1997-98; 1996-97.
Chair of Computer Committee (Math) 1997-98; 1996-97.
Member of Graduate Committee (Math) 1995-96; 1994-95; 1993-94.
Member of Graduate Student Admissions Committee (Math) 1995-96; 1994-95
Member of Faculty Improvement Leave (FIL) Awards Committee (Math) 1993-94.

AMES LABORATORY

Member: Promotion committee for Rana Biswas from Scientist to Scientist II: 2012-2013
Member: Promotion committee for Slava Dobrovistki from Scientist to Scientist II: 2012-2013
Member: Promotion committee for Vladimir Antropov from Scientist to Scientist II: 2012-2013
Member: Promotion committee for Myron Hupalo from Assoc. Sci to Scientist: 2011-2012
Member: Promotion committee for Mikhail Mendeleev from Assoc. Sci to Scientist: 2011-2012
Chair of Promotion Committee for Brett Bode from Assoc. Scientist (P17) to Scientist I (P18): 2006-7
Chair of Promotion Committee for Slava Dobrovitski from Assoc. Sci. (P17) to Scientist I (P18): 2004-5.
Chair of Promotion Committee for Vladimir Kogan from Scientist (P18) to Senior Scientist (P19): 2001.
Chair of Promotion Committee for Ozer Unal from Assoc. Scientist (P17) to Scientist I (P18): 1999-2000.

COLLEGE

Chair: LAS Promotion and Tenure Committee 2015-2016
Chair: LAS Promotion and Tenure Committee 2014-2015
Member: LAS Complex Materials Workshop planning committee 2014-2015
Chair: LAS Promotion and Tenure Committee 2013-2014
Member: LAS Promotion and Tenure Committee 2012-2013
Member: LAS Promotion and Tenure Committee 2011-2012

UNIVERSITY

ISU Faculty Senate 2014-2016
Member of Steering Committee for Graduate Minor in Applied Scientific Computing 2008-2016.
Member of Provost's Committee to Review Proposals for Study in a Second Discipline: 2001-2002
Member of Provost's Committee to Review Proposals for Study in a Second Discipline: 2000-2001
Member of review panel for Pioneer-Hybrid Grants supporting ISU Comp. Mol. Bio.: 1999-2000.
Member of review panel for Pioneer-Hybrid Grants supporting ISU Comp. Mol. Bio.: 1998-1999.
Faculty Advisor, ISU Badminton Club, 1980-2013.

EXTERNAL PROFESSIONAL SERVICE

Member of nominating committee for SIAM Materials Science Activity Group 2013.

RESEARCH OVERVIEW: Jim Evans Date: Feb. 2016 ★★Current most active projects.

METHODOLOGY: Non-equilibrium statistical physics, coarse-graining & multiscale modeling

APPLICATIONS: Self-assembly & stability of nanoclusters; thin film growth & relaxation; catalytic reactions on surfaces and in nanoporous systems; non-equilibrium phase transitions.

Part I: TOPICS RELATED TO SELF-ASSEMBLY, NANOMATERIALS, THIN FILMS

Nucleation & growth of islands during deposition: Fundamental analysis beyond-mean-field theory

*Simulation of tailored models [72,82] (point, square,... islands) for first precise determination of island size distribution (ISD), spatial correlations in island distribution, adlayer percolation, transitions in critical size [95], effects of anisotropic diffusion [91]. Reveal fundamental failure of MF theory. Review [R1].

*Identified subtle correlation between islands size and separation (or capture zone area) as origin of the failure of mean-field (MF) theory - confirmed by expt [113,117]. Precise formulation for ISD [102].

*Realistic theory for Joint Probability Distribution of island sizes and CZ areas [134,145].

*Geometry-based Simulation (GBS): exploits a “stochastic geometry” picture of island formation to develop efficient simulation algorithm which can treat large critical sizes [148,151,158]

★★Rigorous formulation of capture zone (CZ) area distributions based on accurate description of key spatial aspects of nucleation, and thus of the formation of new CZ: PRL [197].

Predictive modeling of the formation of supported nanoclusters (NC) in complex systems

*Fractal & dendritic islands: scaling theory for fractal arm width [88]; analysis for Ag/Ag(111) [159].

*Simulation algorithm for island nucleation on aperiodic quasicrystal surfaces [165,167].

*Competitive etching and oxidation [163] and formation of metallic atomic wires [162] on Si(100).

*Quantum size effects: height selection for bilayer Ag islands on NiAl(110) (including modeling of facile upward transport at low T) [180,199] and for Ag islands on Al-based quasicrystals [184].

★★Directed-assembly of metal NC on periodically ruffled graphene supported on Ru(0001) including detailed atomistic modeling accounting for modulated potential energy surface [222,226,245,249].

★★New formalism including ab-initio kinetics of periphery diffusion and intermixing to treat self-assembly of single and multicomponent NC's: NiAl on NiAl(110), AgAu on Ag(100), Au on Ag(100)/NiAl(100) etc: PNAS [209], JCP [215], PRB [217], PRL [220], Nano Lett [231], JPC Lett [238].

Multilayer epitaxial growth: kinetic roughening; mound formation, slope selection, and coarsening

*Showed “downward funneling” gives smooth growth in metal(100) systems @ low T [55,60].

*First predictive modeling of kinetic roughening, mound slope selection, ES barrier for Fe/Fe(100) [97].

*Most comprehensive predictive modeling of T-dependent mound formation and coarsening for M/M(100) [129,131,140] (with M = Ag), and of fractal wedding-cake formation for Ag/Ag(111) [181].

*Coarse-graining of step dynamics revealed limitations of heuristic PDE's for unstable growth [164,166].

★★Refined BCF theories: coarse-graining of discrete deposition-diffusion equation formalism produces kinetic coefficients refining standard BCF and Chernov BCs: SIAM MMS [210], PRB [243].

Nanocluster sintering, diffusion, destabilization; coarsening in thin films

*Analysis of competition between Ostwald Ripening and Smoluchowski Ripening pathways [185].

*Anisotropic coarsening: developed formulation for anomalous coarsening of rectangular islands with non-equilibrium shapes (constant width) in metal(110) systems [228,229].

★★Nanoscale coalescence/sintering and cluster diffusion: predictive modeling of anomalous scaling with size for cluster-cluster and cluster-step sintering phenomena on the nanoscale: PRL [114], PRB [124]; theory for role of kink rounding barrier inducing this behavior, and further correction of scaling theories for edge nucleation-limited cluster diffusion: PRB [143], Nano Lett [231].

★★Additive-enhanced coarsening via complex formation: developed non-linear reaction-diffusion equation formulation; linearize and analyze relevant BVP: JCP [191], Science [198], PRB [239].

Part II: TOPICS RELATED TO CATALYTIC REACTION-DIFFUSION SYSTEMS etc.

Realistic molecular-level modeling of catalytic reaction and reaction-diffusion processes on surfaces

★★ Predictive ab-initio molecular-level modeling under low-pressure (P) conditions accounting for mixed adlayer ordering, cooperative dissociative adsorption kinetics, rapid diffusion, etc., including first ab-initio non-equilibrium bifurcation or phase diagrams [157,168,186]; also temperature-programmed reaction and titration kinetics. See Reviews: Prog. Surf. Sci. [R3], Chem. Rev. [R5].

*Realistic treatment of collective diffusion in mixed reactant systems [169] as input to exact hydrodynamic reaction-diffusion equations; analysis of fronts and patterns via heterogeneous coupled lattice-gas (HCLG) simulation [R3,R4].

*Analyzed fluctuation-mediated behavior in nanoscale reaction systems, specifically noise-induced transitions in bistable and multistable systems [118,132,172,173].

★★ Reaction on oxide surfaces at high-P: analysis of kinetically-induced non-mean-field correlations and non-mean-field kinetics on crowded surfaces: J. Chem. Phys. = JCP [240], Chem. Rev. [R5].

Chemisorption on metal surfaces: adsorption, desorption, ordering, reconstruction, complexes

*Ordering, phase transitions, adsorption kinetics, TPD (desorption), etc. for CO, O, etc. on metals [156,233,234,R3].

★★ Sulfur on coinage metals: ordering, reconstruction on terraces and at steps, metal-S complex formation: JCP Cover [225], JCP [242], JCP [244].

Nanoporous catalytic reaction-diffusion systems with inhibited diffusive transport

*Catalytic polymerization reaction in nanopores: non-Markovian kinetics [195,200,214]

★★ Generalized hydrodynamic formulation of interplay between inhibited transport (including single-file diffusion) and catalytic conversion reactions in nanoporous materials: JCP [212], PRL [221], JCP [227].

★★ Langevin and Fokker-Planck analysis of inhibited molecular passing in narrow pores which controls reactivity: PRL [230].

Fundamental statistical mechanics of reaction-diffusion models with 1st order phase transitions

*Epidemic analysis for discontinuous transitions [61]; KPZ-type interface propagation in simple reaction models [92]; analysis of transition from Ising to MF critical behavior [153] and of tricriticality [223].

*Analysis of bistability and reaction front propagation in the hydrodynamic limit (with rapid diffusion) for lattice-gas reaction-diffusion models [105,108]; hybrid models with infinite diffusion of one species [96,122,123].

*Development in 1995 of an equation-free heterogeneous multiscale modeling (HMM) method called Heterogeneous Coupled Lattice-Gas (HCLG) simulation to describe reaction fronts and patterns [96,161].

★★ Discovery of generic two-phase coexistence in simple lattice-gas Schloegl type models with a discontinuous transition; analyzed metastability and developed non-thermodynamic nucleation theory: PRL [171], JCP [190], PRE [205], PRE [224], JCP [241].

Other:

*Random Sequential Adsorption (RSA) and Cooperative Sequential Adsorption: analysis of kinetics, spatial correlations; (correlated) percolation; and jammed states: Rev. Mod. Phys. [R1].

PROFESSIONAL ACTIVITIES

SUMMARY OF PAPERS AND PUBLICATIONS

Date	Referred Publications	Book Chapters	Invited Papers/Talks	Contributed Papers/Talks	Other
Jan. 2016	~270	12	~175	~95	1
	journal, conf. proc.	book chapters			

CITATIONS from ISI Web of Science: Science Citation Index Expanded (<http://isiknowledge.com>)
 Total cites (incl. self-cites) in each year as of 8/16. **Overall total cites > 7,500 h-index = 42.**

yr	2000	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
cites	355	302	329	304	275	267	323	351	249	301	314	343	261	266	276	377

Top cited papers (numbering from publication list) with ≥ 50 cites:

[181] Evans, Rev. Mod. Phys. (1993) Random and Cooperative Sequential Adsorption.....	702
[72] Bartelt & Evans, PRB (1992) Scaling Analysis of Diffusion-mediated Island Growth.....	382
[182] Evans et al., Surf. Sci. Reports (2006) Morphological Evolution in Thin Films.....	345
[93] Wen et al., PRL (1994) Diffusion of Large 2D Ag Clusters on Ag(100).....	266
[55] Evans et al., PRB (1990) Low-Temperature Epitaxial Growth.....	216
[100] Wen et al., PRL (1996) Coarsening Mechanisms in a Metal Film.....	156
[82] Bartelt & Evans, Surf. Sci. (1993) Nucleation and Growth of Square Islands.....	143
[87] Evans & Bartelt, JVSTA (1994) Nucleation and Growth in Metal... Homoepitaxy.....	124
[66] Evans, Langmuir (1991) Kinetic Phase Transitions in Catalytic Reaction Models.....	120
[97] Bartelt & Evans, PRL (1995) Transition to Multilayer Kinetic Roughening.....	113
[102] Bartelt & Evans, PRB (1996) Exact Island Size Distributions for... Deposition.....	113
[61] Evans & Miesch, PRL (1991) ...Kinetics of a First-Order Poisoning Transition.....	106
[60] Evans, PRB (1991) Factors mediating Smoothness in Epitaxial... Growth.....	102
[118] Suchorski et al., PRL (1999) Fluctuation-induced Transitions in a Bistable Reaction.....	96
[11] Evans et al. JCP (1983) Irreversible Random and Cooperative Processes.....	79
[91] Gunther et al., PRL (1994) Anisotropy in Nucleation and Growth of 2D Islands.....	78
[21] Nord & Evans, JCP (1985) Irreversible Random Immobile Adsorption.....	70
[113] Bartelt et al., PRL (1998) Island Size and Environment Dependence of Adatom Capture.....	69
[117] Bartelt et al, PRB (1999) Adatom Capture by Arrays of 2D Islands.....	68
[62] Evans & Miesch, Surf. Sci. (1991) Catalytic Reaction Kinetics near...poisoning transition....	63
[79] Bartelt et al, PRB (1993) Island Size Scaling in Surface Deposition Processes.....	59
[95] Bartelt et al. Surf. Sci. Lett. (1995) Transitions in Critical Size for Metal(100) Homoepitaxy...58	58
[99] Bartelt et al., PRB (1996) Island Size Distributions...influence of small cluster mobility.....	57
[96] Tammaro et al., JCP (1995) Hybrid Treatment of Spatiotemporal Behavior in...Reactions.....	56
[132] Suchorski et al., PRB (2001) Fluctuations & critical phenomena in catalytic CO-oxidation...57	57
[88] Bartelt & Evans, Surf. Sci. Lett. (1994) Dendritic Islands in Metal-on-Metal Epitaxy.....	55
[114] Stoldt et al., PRL (1998) Evolution of Far-From-Equilibrium Nanostructures.....	53
[129] Stoldt et al. PRL (2000) Using temperature to tune film roughness.....	52
[69] Kang & Evans, SS (1992) Scaling of surface roughness.....	52
[92] Evans & Ray, PRE (1994) Interface propagation & nucleation for discontinuous transitions...52	52
[81] Meng et al. PRE (1993) Kinetics and steady-state of A+BC surface reactions.....	50
[146] Fournie et al. PRB (2003) Nucleation & growth of Ag films on a quasicrystalline surface.....	50
[75] Evans, JCP (1993) ZGB surface reaction model with high diffusion rates.....	51
[185] Thiel et al. JPCC (2009) Coarsening of 2D Nanoclusters on surfaces.....	50

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- G1. J.W. Evans, "Epitaxial Thin Film Growth", *SIAM NEWS, November (2010), p.4.
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INVITED PAPERS, TALKS. SEE APPENDED LISTING: Total ~ 170 (to 1/2016)

CONTRIBUTED PAPERS, TALKS. SEE APPENDED LISTING: Total ~ 95

HONORS AND AWARDS

Fellow, American Physical Society – Division of Condensed Matter Physics (2002)

ISU/LAS Mid-Career Achievement in Research (2005)

Elsevier “Surface Science Reports: Top Cited Article 2005-2010” (#2 in 2005-10)

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PROFESSIONAL INVOLVEMENT

Editorial Board, Surface Science (Elsevier) 2015-

Editorial Board, Computational Materials Science (Elsevier) 2014-

Editorial Board, Journal of Chemical Physics (American Institute of Physics) 2013-2015

SIAM Materials Science Activity Group Nominating Committee 2013.

Nominator for APS Fellows: 2010 and 2011 (both successful).

CONFERENCE & SYMPOSIUM ORGANIZATION/ REVIEW PANELS

*Lead-organizer: SIAM Materials Science 2016 Minisymposium on “Mesoscale Modeling of Materials and Processes” (with P. Plechac and D. Margetis).

*Co-organizer: NSF-supported Ki-Net 2014 Summer School on “Dynamics and numerics of non-local PDE’s and related equations with applications in the physical and biological sciences” (with H Liu)

*Co-organizer: ISU LAS symposium on Complex Materials (2014)

*Lead-organizer: SIAM 2013 Materials Science Conference Mini-symposium on “Morphological evolution of surfaces, thin films, and clusters”. Co-organizers: D. Margetis

*Lead-organizer: AMS 2013 Sectional Meeting Symposia on “Stochastic processes with applications to physics...” Ames, ISU, April 2013 (with A. Roiterstein, A. Ghosh, J. Peterson)

*Co-organizer: AMS 2013 Sectional Mtg Symp. on “Kinetic & Hydrodynamic PDEs” (with Liu, Tadmor)

*Co-organizer: 2013 NSF Mathematical Sciences-supported Ki-Net Workshop on “Kinetic PDE’s: Analysis and Computation”, Ames ISU April 2013 (with Hailiang Liu, Eitan Tadmor)

*Lead organizer: 2012 SIAM Annual Meeting Mini-symposium: “Surface and thin film evolution: self-assembly, instability, pattern formation”. (June 2012, Minneapolis) Co-organizer: D. Margetis

*Co-organizer: 2010 CSCAMM – U. Maryland Workshop on “Non-equilibrium interface and surface dynamics: theory, experiment, and simulation from atomistic to continuum scales”. University of Maryland. Co-organizers: J. Weeks, T. Einstein, R. Phaneuf, D. Margetis

*Lead-organizer: SIAM 2010 Materials Science Conference Mini-symposium on “Growth and Relaxation of Epitaxial Thin Films”. Philadelphia Co-organizers: D. Margetis and P. Smereka

*Co-organizer: 2009 IMA Symp. on “Spatiotemporal Reaction-Diffusion Phenomena”, with Arnd Scheel.

*Co-organizer: SIAM 2008 Materials Science Conference Mini-symposium on “Clustering, Coagulation, and Coarsening Dynamics”. Co-organizers: Bob Pego, Barbara Niethammer

*Participant of DOE Workshop on “Computational Needs in Alternative & Renewable Energy (CRNARE)”, Rockville MD September 2007.

*Lead-organizer of NSF-IMA co-sponsored ISU/Ames Lab Workshop on “Computational and Mathematical Aspects of Materials and Fluids” with Hailiang Liu, April 2007.

*Member of Review Panel for USDOE Basic Research in Hydrogen Fuel Initiatives in the sub-area “Design of Catalysts at the Nanoscale”, Rockville, MD, March 2005.

*Lead Organizer: Fall 2004 MRS Meeting Symp JJ on "Modeling of Morphological Evolution at Surfaces & Interfaces". 3.5 days (91 presentations) in memory of Maria C. Bartelt (Scientific Leader, Comp. Mat. Sciences, CMS, Lawrence Livermore NL, and a former postdoc). Co-organizers: Z. Zhang, M. Asta, C. Orme

*Co-editor of MRS e-Proceedings Vol. 859E for F2004 MRS Symposium JJ.

<http://www.mrs.org/publications/epubs/proceedings/fall2004/jj/index.html>

*Senior (external) examiner for the Ph.D defense of Dogan Uner at Chalmers University, Goteburg, Sweden, March 2003. Topic: Initial Oxidation Kinetics of Al(111): A Monte Carlo Study.

*Co-Organizer of APS (Div. Materials Physics) 2003 March Meeting Focus Session on "Morphological Evolution of Nanostructures, Interfaces, Surfaces, Thin Films" with R. Phaneuf, R. Hwang, T.L. Einstein.

*Co-Organizer of Materials Research Society Fall 2001 Symposium T on "Statistical Mechanical Modeling in Materials Science" with M.C. Bartelt, A. Karma, S. Torquato, and D. Wolf.

*Co-editor of MRS e-Proceedings Vol. 701 for F2001 MRS Symposium T.

<http://www.mrs.org/publications/epubs/proceedings/fall2001/t/>

*Co-Organizer of Materials Research Society Spring 2000 Symposium L on "Recent Developments in Oxide and Metals Epitaxy" with M. Yeadon, S. Chiang, R.F.C. Farrow, and O. Auciello.

*Co-editor of MRS Proceedings Vol. 619 for S2000 MRS Symposium L.

REFEREE FOR THE FOLLOWING JOURNALS:

Science	Physical Review Letters	Chaos	New J. Physics
J. Mathematical Physics	J. Chemical Physics	J. Crystal Growth	Physica D
J. Statistical Physics	Physical Review B	Physica A	Appl Phys Lett
Physical Chemistry	Physical Review E	Chemical Physics	Nanotech.
Langmuir	Surface Science	J. Colloids and Surfaces A	
Theoretical Chimica Acta	Physics Letters A	Vacuum	J. Appl. Phys.
Applied Physics A	Europhysics Letters	J. Catalysis	Thin Solid Films
J. Vacuum Science & Tech.	Chemical Physics Letters	J. Energetic Materials	MRS Proc.
Euro. J. Physics B	Chem. Eng. Science	Surface Coatings & Tech.	
J. Low Temp. Physics	Adv. Applied Prob.	Discrete Contin. Dyn. Sys. B	
Philosophical Magazine	Canada J. Physics	J. Zhejiang U. Sci. A	

LEVEL OF RECENT JOURNAL PAPER AND PROPOSAL REVIEWING ACTIVITY:

1992: 17 journal papers; **1993:** 15 journal papers, 1 proposal.
1994: 19 journal papers, 2 proposals, 1 tenure case; **1995:** 18 journal papers, 2 NSF ppls.
1996: 19 journal/proceedings papers, 4 proposals, 1 promotion case.
1997: 23 journal papers, 5 proposals, 2 award nom.; **1998:** 21 journal papers, 1 proposal;
1999: 23 journal papers, 2 proposals, 1 tenure case. **2000:** 15 journal papers, 1 NSF proposal.
2001: reviewed 23 journal papers, 2 NSF proposals, 1 DOE proposal, 1 award nomination.
2002: reviewed 20 journal papers, 3 NSF +1 DOE +1 Research Corp. proposal, 2 tenure cases
2003: 27 journal papers, 1 NSF, 1 DOE proposal, 1 promotion; **2004:** 19 journal papers
2005: reviewed 20 journal papers, 2 NSF, 1 DOE proposal, 9 DOE H-initiative proposals
2006: reviewed 18 journal papers, 1 book proposal, 1 NSF proposal
2007: reviewed 17 journal papers, 2 NSF proposals, 2 DOE Incite proposals
2008: 22 journal papers, 1 NSF Career. **2009:** 24 journal papers, 2 NSF, 1 Czech Sci. Fdn.
2010: reviewed 18 journal papers (declined 18 invitations), 1 NSF ppl, 1 Czech Sci. Fdn. Ppl.
2011: reviewed 25 journal papers (declined 24 other invitations), 3 NSF ppl, 1 Norway ppl.
2012: reviewed 27 journal papers (declined 15 other invitations), 1 NSF ppl, 3 DOE ppl.
2013: reviewed 29 journal papers (declined 12 invitations)
2014: reviewed 29 journal papers, 2 NSF ppl.
2015: reviewed 30 journal papers, 2x DOE ppl, 10 senior DOE senior nominations

REVIEWER FOR THE FOLLOWING FUNDING AGENCIES:

National Science Foundation (USA)	Research Corporation
U. S. Department of Energy (BES)	Austrian Science Foundation
Petroleum Research Foundation (ACS).	Israel Science Foundation
International Science Foundation (USA)	Maine Science & Technology Foundation
Czech Science Foundation	

FUNDED PROPOSALS/EXTERNAL FUNDING

CURRENTLY FUNDED RESEARCH PROJECTS AS PI OR CO-PI:

Title: Environment-dependent coarsening of supported metallic nanoclusters (CHE-1507223)

Source of Support: NSF Chemistry Division: Chemical Dynamics Program

Principle Investigator: P.A. Thiel; Co-PI: J.W. Evans

Amount & Period: \$385,000 for 08/2015 - 07/2018 with \$150 K to Evans.

Title: Ames Laboratory Chemical Physics Program

Source of Support: USDOE Basic Energy Sciences – Chemical Sciences Division

Principal Investigator: J.W. Evans and M.S. Gordon; co-PI's: K. Ruedenberg, T. Windus

*Amount & Period: ~\$2,500,000 (4 year total) for 10/2013-09/2017 with \$940 K to Evans.

RECENTLY SUBMITTED RESEARCH PROPOSALS AS PI OR CO-PI:

Title: Far-from-equilibrium assembly of bimetallic nanoclusters: Predictive modeling with ab-initio kinetics (DMR-1606547)

Source of Support: NSF Division of Materials Research: Condensed Matter and Materials Theory

Principle Investigator: J.W. Evans

Amount & Period: \$396,000 for 07/2016 - 06/2019 (under review)

Title: Collaborative Research: Synthesizing shaped intermetallic nanoparticles (CHE-1610567)

Source of Support: NSF Division of Chemistry: Macromolec/Supramolec/Nano

Principle Investigator: W. Huang, co-PI: J.W. Evans (collaborator F. Tsung, Boston U)

Amount & Period: ~\$390,000 for 07/2016 - 06/2019 (declined)

PREVIOUSLY FUNDED NSF PROJECTS AS PI OR CO-PI:

Title: Formation and Stability of Supported Metal Nanostructures (CHE-1111500)

Source of Support: NSF Chemistry Division: Chemical Dynamics Program

Principle Investigator: P.A. Thiel; Co-PI: J.W. Evans

Amount & Period: \$500,000 for 07/2011 - 06/2016 with \$250 K to Evans.

Title: Assembly and stability of metal nanostructures on surfaces (CHE-00809472)

NSF Analytical/Surface Chemistry

Principle Investigator: J.W. Evans; Co-PI: P.A. Thiel

Amount & Period: \$594,000 with \$280,000 for Evans (5 yr total) for 07/15/2008 - 06/30/2011

Title: Spatial Organization in Epitaxial Thin Films and Chemisorbed Layers: Manipulation of Nano- and Meso-scale Structure on Metal Substrates (CHE-0414378) NSF Analytical/Surface Chemistry

Principle Investigator: J.W. Evans; Co-PI: P.A. Thiel

Amount & Period: \$540,000 with \$280,000 for Evans (5 yr total) for 08/01/2004 - 07/31/2009

Title/Source: Nanostructure Formation & Evolution in Thin Films (CHE-0078596) NSF Anal/Surf Chem

Principal Investigator: J.W. Evans; Co-PI: P.A. Thiel

Amount & Period: \$555,969 for August 2000 - July 2005.

Title/Source: Evolution of Thin Film Nanostructures (EEC-0085604) NSF Nano Modeling & Sim - SGI

Principal Investigator: T.S. Rahman; Co-PI's: T.L. Einstein, J.W. Evans, K. Fichthorn

Amount & Period: for \$1.07 million (with \$228,000 to Evans/ISU) for September 2000 - August 2004.

Title/Source: Growth & Equilibration of Thin Metal Films (CHE-9700592) NSF Analytic/Surface Chem

Principal Investigator: J. W. Evans; Co-Principal Investigator: P. A. Thiel.

Amount & Period: \$550,000 (plus \$144,600 in cost-sharing from ISU-IPRT) April 1997 - March 2001.

Title/Source: Nucleation, Growth, Structure of Metal-on-Metal Films (CHE-9317660) NSF Anal/Surf Chem
Principal Investigator: J. W. Evans; Co-Principal Investigator: P. A. Thiel.
Amount & Period: \$406,000 (plus \$103,000 in cost-sharing from ISU-IPRT). Jan. 1994 – Dec. 1997.

Title/Source: Non-Equilibrium Structure of Thin Metal Films (CHE-9014214) NSF Materials Chem Init.
Co-Principal Investigators: P. A. Thiel and J. W. Evans
Amount & Period: \$373,000 (plus \$90,000 in matching support from ISU-IPRT). Sept. 1990–Aug. 1994.

PREVIOUSLY FUNDED NSF REU PROJECTS AS CO-PI:

Title/Source: REU: Computational Chemistry, Physics, and Mathematics (CHE-0139152) NSF REU
Principal Investigator: M.S. Gordon. Co-PI's: J.W. Evans, B. Harmon, K.-M. Ho, et al.
Amount & Period: \$144,000 for May 2002 - April 2005.

Title: REU: Computational Chemistry, Physics, and Mathematics (CHE-0453444) NSF REU
Principal Investigator: H. Stauffer; Co-PI's: X. Song, M.S. Gordon, J.W. Evans, B. Harmon, et al.
Amount & Period: ~\$70,000 for May 2005 - April 2008.

PREVIOUSLY FUNDED USDOE-BES PROJECTS AS PI OR CO-PI:

Title: Ames Laboratory Chemical Physics Program
Source of Support: USDOE Basic Energy Sciences – Chemical Sciences Division
Principal Investigator: J.W. Evans and M.S. Gordon; co-PI's: K. Ruedenberg, T. Windus
Amount & Period: ~\$2,000,000 for 10/2010-09/2014 with \$740K to Evans

Title: Theoretical and Computational Tools for Modeling of Energy-Relevant Catalysis
Source of Support: USDOE BES Chemical Sciences
Principal Investigators: J.W. Evans and M.S. Gordon
Amount & Period: \$500,000 from 09/01/2009 to 09/30/2014 (\$250K to Evans)

Title: Selective and Efficient Catalysis in 3D Controlled Environments
Source of Support: USDOE Basic Energy Sciences, Division of Chemical Sciences
PI: M. Pruski; Co-PI's: A. Bakac, J. Evans, A. Sadow, I. Slowing, J. Vela
Amount & Period: ~\$600,000 with ~\$75K for Evans for 10/1/2010-09/30/2013

Title: Ames Laboratory Chemical Physics Program
Source of Support: USDOE Basic Energy Sciences – Chemical Sciences Division
Principal Investigators: J.W. Evans and M.S. Gordon
Amount & Period: ~\$345,000 per annum for 10/07-09/10 (~\$164K in FY09, \$138K in FY10 for Evans).

Title: Selective and Efficient Catalysis in 3D Controlled Environments
Source of Support: USDOE Basic Energy Sciences, Division of Chemical Sciences
PI: V.-S.Y Lin, co-PI's: M. Pruski; CoPI's: A. Bakac, A. Sadow, J. Evans
Amount & Period: ~\$600,000 with ~\$15K for Evans (per annum) for 10/1/07-09/30/10

Title: Predictive Modeling of the Growth of Energy-Relevant Thin Films and Nanostructures.
Source of Support: USDOE-BES Computational Materials Science Network (CMSN)
PI's: Z.Zhang, K.-M.Ho (team leaders); Chou, Einstein, Evans, Kaxiras, Liu, Wang, Zhang (task leaders)
Amount & Period: \$930,000 (3 year total) (no significant funding to Evans) for 10/01/08 to 09/30/11

Title: A Multi-Scale Approach to the Simulation of Lignocellulosic Biomass
Source of Support: USDOE SciDAC
Principal Investigators: J.C. Smith (ORNL), M. Gordon. Co-PI's: T. Windus, M. Lamm, J. Evans
Amount & Period: \$1,800,000 (3 year total) (no support used by Evans) from 10/01/08 to 09/30/11

Title: High-Performance Comp. Chem.: Scalable Electronic Structure Theory, Non-Equil Stat Mech,...
Source of Support: USDOE-BES SciDAC Program in Computational Chemistry

Principal Investigator: M. S. Gordon (PI); Co-PI's: J.W. Evans, K. Ruedenberg, M. Schmidt
Total Award Amount: \$240,000 with \$45,000 for Evans (per annum) for 10/01/06 - 09/30/09

Title: Multiscale Studies of the Formation and Stability of Surface-Based Nanostructures.
Source of Support: USDOE-BES Computational Materials Science Network (CMSN)
PI's: Z. Zhang, K.-M. Ho (team leaders); Chou, Einstein, Evans, Kaxiras, Shenoy, Wang (task leaders)
Amount & Period: \$840,000 with \$50,000 to Evans (3 year totals) for 10/01/04 - 09/30/08

Title: Ames Laboratory Chemical Physics Program, USDOE BES – Chemical Sciences
Principal Investigators: J.W. Evans and M.S. Gordon
Amount & Period: \$330,000 with \$140,000 for Evans (per annum) for 10/01/04 - 09/30/07

Title: Selective and Efficient Catalysis in 3D Controlled Environments, USDOE - BES Chem. Sci.
PI: M. Pruski; Co-PI's: V. Linn, J. Espenson, A. Bakac, R. Angelici, J. Evans, M. Gordon
Amount & Period: \$600,000 with \$15,000 for Evans (per annum) for 10/1/03-09/30/07

Title/Source: Modeling of Spatiotemporal Behavior in Surface Reactions, BES - Chemical Sciences
Principal Investigator: J. W. Evans
Amount & Period: ~\$120,000 per annum for October 1999 – September 2004

Title/Source: Advancing MR Methods in Electronic Structure Theory. BES SciDAC (Comp Chem)
Principal Investigator: M. S. Gordon (PI); Co-PI's: J.W. Evans, K. Ruedenberg
Amount & Period: \$240,000 with \$45,000 to Evans (per annum) for 10/01/03 - 09/30/06

Title/Source: Computational Chemistry: Advancing... Electronic Structure Theory. BES SciDAC
Principal Investigator: M.S. Gordon; Co-PI's: J.W. Evans and K. Ruedenberg
Amount & Period: \$250,000 with ~\$50,000 to Evans (per annum) Oct. 2001 – Sept. 2003

Title/Source: Modeling of Spatiotemporal Behavior in Surface Reactions, BES - Chemical Sciences
Principal Investigator: J. W. Evans
Amount & Period: ~\$430,000 total for several years from October 1992 – September 1999

Title/Source: Modeling of Catalytic Surface Reactions in Nanoscale Systems, Ames Lab DOE LDRD
Principal Investigator: J. W. Evans Amount & Period: \$26,000 for May - September 1997.

FUNDED EQUIPMENT PROPOSALS AS CO-PI OR SENIOR COLLABORATOR:

Title: Development of High Performance Low Cost Parallel Computer. Source: NSF MRI
PI: M. Gordon; 4 Co-PI's; several senior collaborators (incl. Evans). Amount & Period: ~\$400,000, 2001.

Title: Purchase of Computational Chemistry Hardware. Source: NSF Chemical Instrumentation Program
PI: G. Kraus; Co-PI: J. Evans + 5 others; Amount & Period: \$176,000. Oct. 1998 – Sept. 1999.

Title: Purchase of a Parallel Computing Facility. Source: NSF Chemical Instrumentation Program
PI: M. S. Gordon; Co-PI: J. Evans + 3 others. Period: \$200,524. Dec. 1993 - May 1995.

Title: Purchase of Graphical Supercomputer. Source: NSF Chemical Instrumentation Program
Co-PI's: D. K. Hoffman, J. W. Evans + 3 others. Period: \$197,630. June 1989 - June 1990.

APPENDIX: Invited Papers, Talks (total ~ 170)

2016:

1. “Formulations treating stochastic effects in thin film growth and relaxation including contributions from Peter Smereka”, Symposium on Analysis Modeling and Simulation of Materials in Memory of Peter Smereka, SIAM Conf. on Math Aspects of Mat Sci. Philadelphia May 2016
2. “Coarse-grained mesoscale modeling for deposition-diffusion and reaction-diffusion systems”, Symp on Mesoscale Modeling of Non-equilibrium Assembly, Transport & Reaction Processes, SIAM MS16.
3. “Coarse-graining from atomistic to continuum models for island and step dynamics...” Symposium on Microscopic Processes and Non-equilibrium Phenomena in Epitaxial Growth, SIAM MS16

2015:

1. “Non-equilibrium statistical mechanical & coarse-grained mesoscale modeling of catalytic reaction-diffusion processes” Computational & Theoretical Chemistry USDOE PI Meeting, Annapolis MD April.
2. "KMC simulation of molecular-level models with ab-initio energetics & coarse-grained mesoscale descriptions of catalytic surface reactions" Washington State University, Department of Chemical & Bio Engineering, Pullman, Oct.
3. “Nucleation & growth of nanoclusters during surface deposition: Spatial aspects on nucleation and ab-initio treatment of growth kinetics”, U. Science & Technology China (USTC), Hefei, China December

2014:

1. Drake U, Predictive modeling of complex self-assembly and pattern-forming processes. March
2. NSF Ki-Net Summer School: Fragmentation of capture zones. May
3. NSF Ki-Net Summer School: Discrete non-local models for phase transitions. May
4. SIAM annual meeting: Self-assembly and stability of 2D nanoclusters. Chicago July
5. IUVESTA Int. Workshop: Self-assembly and stability of bimetallic nanoclusters Eisenz Austria Sept.
6. U. Delaware Applied Mathematics Colloquium, November

2013:

1. “From stochastic Interacting Particle Systems to lattice differential equations for reaction-diffusion systems”, NSF-supported Inst. Math & its Applications, U. Minnesota (April 2013)
2. NSF Math. Sci. –supported Ki-Net Workshop on “Kinetic PDE’s” (Ames, April 2013)
3. Symposium of “Kinetic and Hydrodynamic PDE’s”, AMS Sectional Meeting, April 2013.
4. “Unstable multilayer homoepitaxial growth: From 2D islands to 3D mounds”
Symposium on “Epitaxial Thin Film Growth”, SIAM Materials Science Conference, June 2013.
5. “Nanocluster self-assembly: Far-from-equilibrium shapes and composition profiles”,
Symposium on “Morphological evolution of crystalline surface, thin films, and nanoclusters” (self-invite as organizer), SIAM Materials Science Conference, June 2013.

2012:

1. “Self-assembly of Epitaxial Metal Nanostructures”, Nanoscience Program, Arizona State U., Jan.
2. “KMC simulations of atomistic lattice-gas models for surface processes”, Arizona State U., Jan.
3. “Predictive modeling of the formation of binary alloy nanostructures”, ICREM-Brown U workshop on “Heterostructured nanocrystalline materials”, Brown University, Providence, RI May.
4. “Multi-site lattice-gas modeling of the far-from-equilibrium formation of epitaxial nanostructures”, U. Minn. Symposium on “Advancing QChem: Interfacing electronic structure with dynamics”, June.
5. “Capture zones for submonolayer island formation during deposition”, SIAM mini-symposium on “Surface and thin film evolution” (self-invite as organizer), Minneapolis, MN, July.
6. “Self-assembly of single- and multi-component epitaxial metal nanostructures” U. Florida Department of Materials Science, Gainesville, FL, August.

7. "Formation on multicomponent epitaxial nanostructures by self-assembly and directed assembly", IPAM-UCLA workshop on "Atomistic and mesoscale modeling of materials defects", October.
8. "Statistical Mechanical/multiscale modeling of reaction systems", DOE Chem. Sci CPIMS Mtg, Oct.

2011:

1. "Far-from-equilibrium growth of epitaxial metal nanostructures in multi-component systems: predictive atomistic modeling", CMSN Coordinating Meeting, Dallas Texas, January
2. "Atomistic and Coarse-Grained Modeling of Epitaxial Thin Film Growth and Relaxation", Illinios Institute of Technology, Chicago, March.
3. "Interface Propagation: From discrete stochastic models to PDE's", IA PDE conference, Ames, May
4. "Far-from-equilibrium growth of epitaxial metal nanostructures in multi-component systems: predictive atomistic modeling", ACCGE18, Monterey, August.

2010:

1. "Stochastic Models for Spatial Epidemics", Spring Central AMS Regional Mtg, St. Paul, April 2010.
2. "Predictive Atomistic and Coarse-Grained Modeling of Epitaxial Thin Film Growth", Plenary lecture at SIAM Materials Science Conference, May 2010.
- *3. "Interplay of spatial organization and ordering in the growth of alloy films", Minisymph on Growth & Relaxation of Epitaxial Thin Films, SIAM Mat. Sci. Conf., May 2010. *self-invite as symp co-organizer
4. "Novel coarsening kinetics for islands on surfaces: Effects of anisotropy, QSE, and additives" Minisymph on Self-similarity/scaling in models for materials science, SIAM Mat. Sci. Conf. May 2010.
5. "Atomistic and Coarse-Grained Modeling of Epitaxial Thin Film Growth", Int. Conf. on "Mathematical Aspects of Crystal Growth" Sapporo, Japan July 2010.
6. "Atomistic and Coarse-Grained Modeling of Crystal Growth by Vapor Deposition", 14th International Summer School on Crystal Growth, Dalian, China, August 2010.
7. "Modeling Strategies for of Crystal Growth: KMC et al. (Tutorial Lecture)", 14th International Summer School on Crystal Growth, Dalian, China, August 2010.
8. "Realistic multi-site multi-component lattice-gas modeling for epitaxial growth of metal films on binary alloy surfaces", Workshop on "Non-equilibrium interface and surface dynamics: Theory, experiment and simulation from atomistic to continuum scales" CSCAMM, U. Maryland, October 2010.

2009:

1. "Atomistic and Multiscale modeling of CO-oxidation: From nanoscale fluctuations to mesoscale fronts", Inst Physical Chemistry and Catalysis, U. Ulm, Germany February 2009
2. "Modeling of the Growth of Homoepitaxial & Heteroepitaxial Ag Thin Films: Kinetics, Quantum Size Effects, and Strain", Dept. Physics, U. Ilmenau, Germany February 2009
3. "Modeling of the Growth of Homoepitaxial & Heteroepitaxial Ag Thin Films: Kinetics, Quantum Size Effects, and Strain", Dept. Physics, U. Koeln, Germany February 2009
4. "Statistical Mechanical treatment of Schloegl's Second Model for Autocatalysis", Harz Seminar on Non-linear Dynamics, Harz Mountains, Germany, March 2009
5. "Atomistic and Multiscale modeling of CO-oxidation: From nanoscale fluctuations to mesoscale fronts", Dept. Physical & Electrochemistry, U. Hannover, Germany March 2009
6. "Modeling of the Growth of Homoepitaxial & Heteroepitaxial Ag Thin Films: Kinetics, Quantum Size Effects, and Strain", Inst. Surface Physics, U. Hannover, Germany February 2009
7. "Epitaxial growth of metal films on NiAl(110) binary alloy substrate", Surface Kinetics International conference, U. Utah, March 2009.
8. "Stochastic "interacting particle systems" models for reaction-diffusion systems: Non-linear kinetics, steady-state bifurcations (phase transitions), reaction fronts" IMA Seminar on Mathematics and Chemistry, IMA, U Minnesota, April 2009.
9. "From molecular-level reaction models to continuum reaction diffusion equations", IMA Symposium on Spatiotemporal Reaction-Diffusion Phenomena, IMA U Minnesota, May 2009

10. "Atomistic and multiscale modeling of CO-oxidation on Pd(100) and Rh(100): From nanoscale fluctuations to mesoscale reaction fronts" Institute of Physics-CAS, Beijing, June 2009.
11. "Evolution of Thin Film Morphology during Epitaxial Growth: Modeling and Experiment" Dept. Physics, Renmin University, Beijing, June 2009
12. "Predictive Atomistic and Coarse-Grained Modeling of Epitaxial Thin Film Growth", Workshop on Mathematical modeling in the Materials Science, Inst. Math Science, Nat. U. Singapore, July 2009
13. "Coarsening of Island Distributions on Surfaces: Ostwald vs Smoluchowski vs Anomalous Ripening", Workshop on Math. Modeling in the Materials Science, Inst. Math. Sci., Nat. U. Singapore, July 2009
14. "Nanostructure formation in metal films: Highlights of STM studies and atomistic modeling", Bunsen Colloquium: Microscopic Views on Interface Phenomena, Reisenburg Castle, Germany, December 2009.

2008:

1. "Atomistic and multiscale modeling of CO-oxidation", CMSN Coordinating Meeting, Gatlinburg, Tennessee, Oct.31-Nov.1 (2008)
2. "Statistical Mechanical and Multiscale Modeling of Surface Reaction Processes", CPIMS Contractors Meeting, Airlee House, Warrenton, Virginia, Nov. 2008.
3. "Predicting Multilayer Growth Morphologies of Ag Films controlled by Step Edge Barriers & Quantum Size Effects", American Soc. Crystal Growth West Mtg, Fallen Leaf Lake, S. Lake Tahoe, CA June 2008.
- *4. "Coarsening of Island Distributions on Surfaces: Ostwald vs Smoluchowski vs Anomalous Ripening", SIAM Conference on "Mathematical Aspects of Materials Science", Minisymposium: Clustering, Coagulation and Coarsening Dynamics Philadelphia May 2008. *self-invitation as symp. co-organizer
5. "Step dynamics modeling of multilayer growth: Step edge barriers, quantum size effects, & fluctuations" SIAM Conference on "Mathematical Aspects of Materials Science", Minisymp.: Kinetics and Fluctuations of Crystal Surfaces: From Discrete Models to Continuum, Philadelphia May 2008.
6. "Predicting Multilayer Growth Morphologies of Ag Films controlled by Step Edge Barriers and Quantum Size Effects", Workshop on "Facets of Heteroepitaxy: Theory, Experiment, and Computation", Banff International Research Station, Banff, Alberta, Canada, Feb. 2008

2007:

1. "Growth of Ag films on Alloy Substrates", CMSN Coordinating Mtg, Iowa State U., Ames, Oct 2007
2. "Kinetic Monte Carlo Simulation of Epitaxial Thin Film Growth" 13th Int. Summer School on Crystal Growth, Park City, Utah, August 2007.
3. "Kinetic Monte Carlo Simulation of Epitaxial Thin Film Growth", Department of Materials Science, U. Utah, August 2007.

2006:

1. "Metal film growth on complex substrates: 5-fold surfaces of icosohedral quasicrystals", CMSN Coordinating Meeting, U. Maryland – College Park, October 2006.
2. "Morphological evolution in thin film homoepitaxy: Modeling and experimental studies of unstable multilayer growth" Inst. Materials Research, Tohoku University, Sendai, Japan, June 2006.
3. "Simultaneous etching and oxidation of vicinal Si(100): Modeling the evolution of complex step morphologies", Center for Interdisciplinary Research, Tohoku University, Sendai, Japan, June 2006.
4. "Morphological evolution in thin film homoepitaxy: Modeling and experimental studies of unstable multilayer growth" Inst. Solid State Physics, University of Tokyo, Kashiwa, Japan, June 2006.

2005:

1. "Atomistic Modeling of Cooperative Phenomena in Surface Reaction Processes", USDOE BES Meeting on Condensed Phase & Interfacial Molecular Science, Arlie House, Warrenton, VA, Oct. 2005.
2. "Atomistic Modeling of Cooperative Phenomena in Surface Reactions", Lawrence Berkeley National Laboratory, Berkeley, October 2005.

3. "Modeling Strategies for Unstable Multilayer Growth: From Atomistic to 2D Continuum Step Dynamics to 3D Continuum", CMSN Coordinating Meeting, U. Wisconsin – Madison, October 2005.
4. "From Atomic Scale Ordering to Mesoscale Reaction Front Propagation: Analysis of Bistable Surface Reactions", Workshop on "Multiscale Modeling in Condensed Matter and Materials Sciences", Inst. For Pure & Applied Mathematics, UCLA, October 2005.
5. "Integrated Modeling and Experimental Studies of Homoepitaxial Thin Film Growth", APS Workshop on Surface and Interface Science, Argonne National Laboratory, September 2005.
6. "From Atomic Scale Ordering to Mesoscale Pattern Formation in Surface Reactions: HCLG Simulation Approach", Inst. Math. Applic. "Atomistic Motion to Macroscale Models" Workshop, U. Minn, April. 2005
7. "Atomistic and Continuum Modeling Strategies for Homoepitaxial Thin Film Growth", Institute of Mathematics & Applications, University of Minnesota, Feb. 2005
8. "Atomistic Models for Low-Temperature Growth of Epitaxial Metal Films" at the workshop on "The Physics of Ultra-thin Films near the Metal-Insulator Transition II", at Brookhaven National Laboratory, January 2005 (trip cancelled due to weather; powerpoint presentations sent instead)
9. "From Atomic Scale Ordering to Mesoscale Reaction Front Propagation: CO-oxidation on Pd(100)", Department of Chemistry, National University of Singapore, January 2005
10. "Atomistic and Continuum Modeling of Homoepitaxial Thin Film Growth", at the workshop on "Nanoscale Material Interfaces: Experiment, Theory, and Simulation", Institute for Mathematical Sciences, National University of Singapore, January 2005.

2004:

1. "Formation and Relaxation of Submonolayer Films: Atomistic and Continuum Modeling Approaches", CNRS UJF – Grenoble, France, Sept. 2004
2. "From Atomic Scale Ordering to Mesoscale Front Propagation: HCLG Simulations for CO-oxidation on Pd(100)", CECAM Workshop on "Dynamics at the Mesoscale", Lyon, France, Sept. 2004
3. "Coarsening Processes in Homoepitaxial Thin Films: Atomistic and Continuum Modeling", SIAM Conference on Mathematical Aspects of Materials Science, Los Angeles, May 2004.
4. "Predictive Models for Nanostructure Evolution during Epitaxial Thin Film Growth", March Meeting of the American Physical Society, Montreal, March 2004.

2003:

1. "Atomistic and Continuum Modeling of Thin Film Growth and Relaxation" CMSN Proposal Formulation Workshop, Emory University, Atlanta, GA Jan. 2003
2. "Fluctuations and Patterns in Surface Reactions: A Statistical Physics Approach" Conference on Catalysis, Chalmers University, Goteburg, Sweden March 2003.
3. "Comparison of homoepitaxial film growth for Ag/Ag(100) and Ag/Ag(111)", Kansas State University, Manhattan, Kansas, May 2003.
4. "Predictive Models of Epitaxial Thin Film Growth: Atomistic and Continuum Approaches" Workshop on "Nonequilibrium Interface Dynamics: Theory and Simulation from Atomistic to Continuum Scales" Center for Scientific Computation and Mathematical Modeling, U. Maryland, Oct. 2003

2002:

1. "Growth & Relaxation of Epitaxial Thin Films: Atomistic & Continuum Modeling", Plenary Talk UCLA IPAM Workshop "Math. in Nanoscale Science", Lake Arrowhead, CA, Dec 2002.
2. "Multilayer Growth of Metal Homoepitaxial Films: Formation and Evolution of Mounds", Ecole des Mines, Nancy, France, June 2002.
3. "Nanostructure Formation and Relaxation in Metal(100) Homoepitaxial Systems", Institute of Surface Physics, Universitaet Hannover, Hannover, Germany, June 2002.

4. "Fluctuations and Reaction Fronts in a Lattice-Gas Model for CO-Oxidation", Department of Physics, Humboldt Universitaet, Berlin, Germany, June 2002.
5. "Fluctuations and Reaction Fronts in a Lattice-Gas Model for CO-Oxidation", Conference on "Fronts, Fluctuations, and Growth", Michigan Center for Theoretical Physics, U Michigan, Ann Arbor, May 2002.
6. "Interacting Particles Systems Models for Surface Adsorption and Reaction", Department of Mathematics, Monash University, Australia, May 2002.
7. "Formation and Evolution of Mounds during Ag/Ag(100) Growth", Int. Seminar on "Models of Epitaxial Crystal Growth", MPI fuer Physik Complexer Systeme, Dresden, Germany, Mar 2002.
8. "Nanostructure Evolution in Thin Film Growth and Relaxation", Department of Physics, Kansas State University, Manhattan, Kansas, February 2002.

2001:

1. "Growth and Relaxation in Submonolayer Epitaxial Films", 26th International Nathiagali Summer College on Physics and Contemporary Needs (INSC), Nathiagali, Pakistan, July 2001.
2. "Multilayer growth of Epitaxial Films: Kinetic Roughening and Mound Formation", 26th INSC, Nathiagali, Pakistan, July 2001.
3. "Nanostructure Evolution in Submonolayer Films", 26th INSC, Nathiagali, Pakistan, July 2001.
- "Non-linear Dynamics, Pattern Formation, and Fluctuations in Atomistic Models for Surface Reactions", 26th INSC, Nathiagali, Pakistan, July 2001.
4. "Multilayer Growth in Metal(100) Homoepitaxy: Key processes in Predictive Atomistic Models", NATO Advanced Research Workshop, Corfu, Greece, June 2001.
5. "Nanostructure Formation and Relaxation in Metal(100) Homoepitaxial Systems", Kamerlingh-Onnes Laboratory, University of Leiden, The Netherlands, June 2001.
6. "Nanostructure Formation and Relaxation in Metal(100) Homoepitaxial Systems", Department of Applied Physics, University of Twente, The Netherlands, June 2001.

2000:

1. "Morphological Evolution during Multilayer Growth of Metal Films", for "Computer Simulation in Electrochemistry" Symposium, 220th National ACS Meeting, Washington DC, August 2000.
2. "Simulations of Submonolayer Epitaxy and Etching", *ibid*, Washington DC, August 2000.
3. "Growth and Relaxation of Thin Metal Films", Physics, University of Maryland, August 2000.
4. "Temperature Dependence of Epitaxial Growth in Metal Films: Surprising Behavior in Simple Systems", CECAM Workshop on "Growth, Morphology, and Magnetic Properties of Epitaxial Metallic Systems", Lyon, France, July 2000.
5. "Developments in Submonolayer Growth and Relaxation of Homoepitaxial Metal Films", Dipartimento di Fisica, Universita degli Studi di Firenze, Florence, Italy, July 2000.
6. "Ordering, Percolation, and Diffusion in Atomistic Models for Surface Reactions", CECAM Workshop on "Catalysis from First-Principles", Lyon, France, July 2000.
7. "Chemical Wave Propagation in Lattice-Gas Models of Surface Reactions: Analysis of the Hydrodynamic Limit", CECAM Workshop on "Statistical and Dynamical Aspects of Surface Reactions: Theory, Modeling, and Experiments", Lyon, France, July 2000.
8. "Temperature-Dependence of Multilayer Growth of Ag/Ag(100)", Department of Physical Chemistry, Universitaet Ulm, Germany, June 2000.
9. "Interplay between Ordering, Percolation, and Transport in Disordered Systems", Laboratoire de Science et Genie des Materiaux Metalliques (CNRS), Ecole des Mines, Nancy, France, June 2000.
10. "Multilayer Growth of Ag/Ag(100) Homoepitaxial Thin Films", Bonassola workshop on Nanoscale Modification of Surfaces and Thin Films, Bonassola, Italy, May 2000.

1999:

1. "Homoepitaxial Growth at Low Temperatures: Some Surprises for Simple Systems", DOE Workshop on "The Physics of Ultrathin Films near Metal-Insulator Transition", Brown University, RI, Dec. 1999.

2. "Non-Equilibrium Growth and Post-Deposition Relaxation of Epitaxial Thin Films", Physics Colloquium, University of Rhode Island, December 1999.
3. "Spatio-Temporal Behavior in Surface Reactions: Chemical Diffusion, Chemical Waves, and Fluctuations", Sandia National Laboratories, Livermore, California, February 1999.
4. "Growth and Relaxation of Epitaxial Metal Thin Films", Materials Research Laboratory, University of Illinois, Urbana-Champaign, Illinois, January 1999.

1998:

1. "Formation and Relaxation of Two-Dimensional Metal Islands on Surfaces", Fall MRS Symposium on
2. "Surface and Interface Structure and Dynamics", Boston, December, 1998.
3. "Formation and Relaxation of Island Distributions in Metal Epitaxy", Workshop on "Bridging the Time and Length Scales in Modeling Epitaxial Growth". NSF/DARPA project on "Virtual Integrated Prototyping (VIP) for Epitaxial Growth", Hughes Research Labs, Malibu, California, August 1998.
4. "Chemical Diffusion and Wave Propagation in Surface Reactions", Abteilung Physical Chemie, Fritz-Haber-Institute, Berlin, Germany, June 1998.
5. "Formation and Relaxation of 2D Island Distributions in Metal Epitaxy", 19th International Seminar on Surface Physics, Polanica Zdroj, Poland, June 1998.
6. "Growth and Relaxation of Metal Epitaxial Films: Ag/Ag(100)", Abteilung Theorie, Fritz-Haber-Institute, Berlin, Germany, June 1998.
7. "Chemical Diffusion and Wave Propagation in Lattice-Gas Models of Surface Reactions", Workshop on "Recent Advances in Computer Simulation Studies in Condensed Matter Physics", Center for Simulational Physics, University of Georgia, Athens, Georgia, February 1998.

1997:

1. "Formation of Islands and Mounds during Epitaxial Growth of Metal Films", Joint US-Argentina Workshop on "Structure and Topography of Surfaces", La Plata, Argentina, November 1997.
2. "Chemical Diffusion and Wave Propagation in Catalytic Surface Reactions", Joint US-Argentina Workshop on "Structure and Topography of Surfaces", La Plata, Argentina, November 1997.
3. "Formation of Islands and Mounds during Metal(100) Homoepitaxy", 15th Conf. on Crystal Growth and Epitaxy (Amer. Assoc. Crystal Growth - West), Fallen Leaf Lake, California, June 1997.
4. "Kinetic Roughening and Mounding during Metal(100) Homoepitaxy", J. W. Evans and M. C. Bartelt, Spring Meeting of the Japanese Physical Society, Symposium on "Dynamical Processes during Epitaxial Growth", Nagoya, Japan, March, 1997.
5. "Post-deposition Dynamics of Metal(100) Homoepitaxial Adlayers: Cluster Diffusion, Restructuring, and Coarsening", US-Japan Seminar on "Surface Dynamics and Structures during Epitaxial Growth", Nagoya, Japan, March 1997.
6. "Kinetic Phase Transition during Metal(100) Homoepitaxy between Temperature Regimes of Smooth Growth and Mounding", J. W. Evans and M. C. Bartelt, US-Japan Seminar on "Surface Dynamics and Structures during Epitaxial Growth", Nagoya, Japan, March 1997.

1996:

1. "Growth and Equilibration of Metal(100) Homoepitaxial Films", Physics Department, University of Michigan, Ann Arbor, Michigan, September, 1996.
2. "Submonolayer Nucleation and Growth, and the Transition to Multilayer Kinetic Roughening during Metal(100) Homoepitaxy", NATO ASI on "Surface Diffusion", Rhodes, Greece, August, 1996.
3. "Growth and Equilibration of Metal Homoepitaxial Films", Institut de Physique Experimentale, EPF Lausanne, Lausanne, Switzerland, July, 1996.
4. "Non-linear Diffusion and Chemical Wave Propagation in Surface Reactions", CECAM Workshop on
5. "Pattern Formation in Surface Reactions", Lyon, France, June, 1996.
6. "Microscopic Models of Spatiotemporal Behavior in Surface Reaction", ESF Workshop on "Surface Restructuring & Non-Linear Dynamics in Reactions at Metal Surfaces", Cambridge, England, Jan. 1996.

1995:

1. "Modeling of Wave Propagation and Explosions in Surface Reactions", European Science Fdn. Workshop: "Adsorption & Catalytic Reaction Dynamics at Surfaces", Monterosso, Italy, Dec., 1995.
2. "Transition to Multilayer Kinetic Roughening", Gordon Research Conference on "Epitaxial Thin Films and Interfaces", New Hampshire, July 1995.
3. "From Submonolayer to Multilayer Growth in Metal (100) Homoepitaxy", Institut für Oberflächen Chemie, Universität, Ulm, Germany, May 1995.
4. "Diffraction Studies of Kinetically Roughening Epitaxial Films", Institut für Festkörperphysik, Universität, Hannover, Germany, May 1995.
5. "Transition from Submonolayer Growth to Multilayer Kinetic Roughening: Metal(100) Homoepitaxy", WE-Hereaus Seminar: "Continuum & Atomistic Aspects of Morphological Features of Crystalline Surfaces /Small Particles," Bad Honnef, Germany, May 1995.
6. "Epitaxial Thin Film Growth", Dept. of Physics, Univ. of Missouri at Columbia, March 1995.
7. "Nucleation, Growth, and Kinetic Roughening of Epitaxial Thin Films," WE-Hereaus Seminar on "Fundamentals of Epitaxial Growth," Physikzentrum Bad Honnef, Germany, February 1995.
8. "Random and Cooperative Sequential Adsorption: Models for Chemisorption, Surface Reaction and Epitaxial Growth," (90 min) Les Houches School on "Space Filling Problems," France, Jan.1995.

1994:

1. "Nucleation, Growth, and Kinetic Roughening of Metal-on-Metal Epitaxial Thin Films," J. W. Evans and M. C. Bartelt, Fall Meeting of the Materials Research Society, Boston, Dec. 1994.
2. "Far-From-Equilibrium Surface Adsorption and Reaction Processes", Department of Chemistry and Laboratory for Surface Studies, University of Wisconsin-Milwaukee, October 1994.
3. "Nucleation, Growth, and Roughening of Thin Films," Plenary Lecture for Symposium on "Experiments and Simulations of Surface Processes", San Luis, Argentina, August 1994.
4. "Mean-Field versus Lattice-Gas Models for Surface Reactions: Interface Propagation and Nucleation Phenomena", lead talk at ESF Workshop on "Adsorption & Catalytic Reaction Dynamics at Surfaces," Cambridge University, Cambridge, England, April 1994.
5. "Hybrid Models for Spatiotemporal Behavior in Surface reactions", *ibid*, Cambridge, April 1994.
6. "A Lattice-Gas Model mimicking the NO + CO Reaction in Pt(100), *ibid*, Cambridge, April 1994.
7. "Far-From-Equilibrium Processes at Surfaces," Physics Dept., Georgia Tech., Atlanta, Feb. 1994.

1993 AND EARLIER:

1. "Nucleation and Growth in Metal-on-Metal Homoepitaxy: Rate Equations, Simulations and Experiments," 40th Nat. Symposium AVS, Orlando, November 1993.
2. "Nucleation and Growth in Metal-on-Metal Homoepitaxy," NIST, Gaithersburg MD, October 1993.
3. "Nucleation and Growth in Metal-on-FCC(100) Metal Epitaxy," Abteilung für Oberflächenchemie and Katalyse, Universität Ulm, Ulm, Germany, June 1993.
4. "Simple Lattice-Gas Model for the NO + CO Reaction on Pt(100)," CECAM Workshop: Random Sequential Addition and Generalizations, Orsay-France, June 1993
5. "Spatial Correlations for Cooperative Sequential Adsorption with Clustering and Limiting Continuum Processes," *ibid*, Orsay, France, June 1993.
6. "Irreversible Island Formation during Deposition: Size & Separation Distributions; Diffraction Profiles," U.S.-Japan Seminar on Surface Characterization, Hawaii, March 1993.
7. "Scaling of Roughness & Bragg-Oscillation Decay during Low-Temp. Epitaxial Growth," *ibid* 1993.
8. "Modeling Surface Adsorption & Reaction Processes," Chemical Eng. Dept., Purdue, Jan. 1993.
9. "Spatio-Temporal Behavior in Surface Reactions: Mean-Field versus Lattice-Gas Modelling," Physics Department, Clarkson University, Potsdam, December 1992.

10. "Irreversible Island Formation in Surface Deposition Processes: Island Size and Separation Distributions," Institute für Festkörperphysik, Universität Hannover, Hannover, August 1992.
11. "Comparison of Mean-Field, Lattice-Gas, and Hybrid Models of Surface Reaction", Fritz-Haber-Institute der Max-Planck-Gesellschaft, Berlin, August, 1992.
12. "Far-From-Equilibrium Thin-Film Growth Processes," DRECAM/SRSIM Division; Commissariat a L'Energie Atomique Saclay, Gif-sur-Yvette, France, July 1992.
13. "Surface Roughness and Bragg Oscillation Decay in Low-Temperature Epitaxial growth," CECAM Discussion Meeting on Applic. of Random Sequential Adsorption Process, Orsay, France, July 1992.
14. "Applic. of Random & Cooperative Sequential Adsorption to Chemisorption Processes," *ibid* 1992.
15. "Kinetic Phase Transitions in Surface Reactions," Dept. Chem. Eng., U. Minnesota, April 1992.
16. "Kinetic Phase Diagrams for Catalytic Surface Reactions," Department of Chemical Engineering, University of California, Santa Barbara, March 1992.
17. "Stochastic Models for Surface Adsorption," Dept. of Statistics, University of Iowa, November 1991.
18. "Modeling of Epitaxial Thin-Film Growth at Low-Temperature," Institute für Festkörperphysik, Universität Hannover, Hannover, August 1991.
19. "Bistability versus Discontinuous Transitions in Lattice Models of Catalytic Reactions," Fritz-Haber-Institute der Max-Planck-Gesellschaft, Berlin, August 1991.
20. "Modeling of Epitaxial Thin-Film Growth at Low-Temperature," Institute für Festkörperforschung, Forschungszentrum KFA, Jülich, July 1991.
21. "Kinetic Phase Transition, Catalytic Reactions, and Epidemics," Institute für Theoretische Physik der Universität zu Köln, Köln, July 1991.
22. "Characterization of Non-Equilibrium Micro-Structure," Dept. Physics U. Auckland, NZ Aug. 1988.
23. "Non-Hermitian Hamiltonians in Arrangement Channel QM," Dept. Chem., UBC, Feb. 1983.
24. "On the Solution to Faddeev's Equations in Differential Form, Workshop on Few Body Problems, Brown University, August 1979
25. "Truncation of BBGKY type hierarchies in kinetic theory", Dept Math. Physics, U Adelaide, 1978.

APPENDIX: Contributed Talks (T) and Posters (P); Seminars at ISU (S) (total ~ 95)

- (T) "Ab-initio KMC modeling of self-assembly kinetics for bimetallic epi NC's" AVS Int Symp Baltimore 2014
- (T) "Ab-initio KMC modeling of self-assembly kinetics for bimetallic epi NC's" MRS Symp WW Boston 2013
- (T) "Multi-functionalization of nanoporous catalytic materials to enhance yield" MRS Symp. AA Boston 2013.
- (T) "Atomistic and CG modeling of film growth on quasicrystals" MRS Symp KK Boston 2012
- (P) "Atomistic modeling of Ru NC formation on graphene/Ru(0001): TDA vs. KDA" MRS Symp. S Boston 2012.
- (T) "Conversion reactions in surface-functionalized mesoporous silica..." MRS Symp. RR Boston 2011.
- (T) "Formation on Ni-rich nanostructures and adlayers on NiAl(110)..." MRS Symp. EE Boston 2011
- (T) "Morphological evolution during growth+erosion on Si(100): e-structure...to CG" MRS Symp EE Boston 2011
- (T) "Capture zone area distributions for homogeneous nucleation and growth of islands..." March APS Dallas 2011
- (S) "Stochastic models for spatial epidemics", Computational Applied Math seminar, ISU Jan 2011
- (T) "Formation of irregular Al islands on NiAl(110)..." MRS Symp. UU Boston 2010
- (T) "Far-from equilibrium film growth on alloy surfaces: Ni and Al on NiAl(110)", March APS Mtg, Portland 2010.
- (S) "Growth and relaxation in epitaxial thin films", Physics Colloquium, ISU, February 2010.
- (T) "Atomistic and Coarse-Grained Continuum Modeling of Complex Physical Systems", CAM ISU Math 2009.
- (S) "Far-From-Equilibrium Surface Reaction Processes", Ames Lab, Chem. Physics review by ISU, April 2009.
- (T) "Kinetics of Facile Bilayer Island Formation for Ag on NiAl(110)" March APS Meeting, New Orleans 2008.
- (T) "Modeling of Coarsening in Thin Films: Ostwald vs. Smoluchowski vs. Anomalous Coarsening", CAM Seminar ISU Math, Mar. 2008.
- (P) "Complex Wedding-Cake Morphologies in Ag/Ag(111) Film Growth: Predictive Analysis from Realistic Atomistic Modeling", BIRS Workshop on Heteroepitaxy, Banff, Canada Feb. 2008
- (T) "Evolution of Complex Morphologies in Homoepitaxial Thin Film Growth: Integration of STM Experiments and Predictive Atomistic Modeling", Condensed Matter Physics Seminar, ISU, September 2007.
- (S) "Atomistic and Coarse-Grained Continuum Modeling of Reaction Processes", CAM Seminar ISU Math, 2007.
- (S) "Realistic Modeling of Complex Physical and Chemical Systems", Grad Student Colloq., ISU Math, Fall 2007.
- (S) "Far-From-Equilibrium Surface Reaction Processes", Ames Lab, Chem Physics on-site review, April 2007.
- (S) "Modeling of Polymerization in Mesoporous Silica", Ames Lab, Catalysis on-site review, April 2007.
- (T) "Exploring Complex "Wedding-Cake" Film Morphologies: Ag/Ag(111)", AVS, San Fransisco, Nov, 2006.
- (S) "Mathematical Modeling of Complex Systems", Graduate Student Colloquium, ISU Math, Fall 2006.
- (T) "Step dynamics modeling of mound slope and shape selection", APS, Baltimore, Mar. 2006.
- (P) "Al Thin Film Growth on Al-rich 5f Quasicrystals", 9th Int. QC Conf., ISU, Ames IA May 2005
- (P) "Atomistic & Continuum Modeling of Thin Film Growth", IMA, U. Minn. MN, April 2005
- (S) "Growth & Equilibration of Epitaxial Metal Films: Modeling & Expt", ISU MSE Dept Colloqu..., March 2005.
- (S) "Atomistic and Continuum Modeling of Epitaxial Thin Film Growth", CAM Seminar, ISU Math Dept. Jan 2005
- (S) "Applied Math meets Materials Science: Modeling of Thin Film Systems", ISU Student Math Club, 2004
- (P) "Mound Formation and Evolution in Ag/Ag(100) Homoepitaxy", Fall MRS, Boston, Dec. 2004.
- (S) "Far-From-Equilibrium Surface Reaction Processes", Ames Lab, Chem Physics on-site review, April 2004.
- (S) "KMC, Hybrid, Multiscale Simulation Approaches to Surface..." Ames Lab Sci-DAC Review, Apr 2004
- (T) "Geometry-based Simulation of Submonolayer Film Growth" 50th AVS, Baltimore, MD Nov. 2003
- (S) "Atomistic and Continuum Modeling of Thin Film Growth & Relaxation", CAM Seminar, ISU Math 2003

- (T) "Beyond-Mean-Field Rate Equ Theories for Island Nucleation & Growth", APS, Austin, Mar. 2003
- (P) "Advances in Computational Chemistry @ Ames Lab" USDOE SciDAC Mtg, Napa, CA, March 2003
- (S) "Overview of Nucleation and Growth on Surfaces", Ames Lab Materials & Eng. Physics Feb. 2003
- (T) "Island Sizes and Capture Zone Areas in Submonolayer Deposition", Fall MRS, Boston, Dec. 2002.
- (P) "Sintering of 2D Nanoclusters in Metal(100) Homoepitaxial Systems", *ibid*, France, June 2002.
- (P) "Kinetic Roughening...for Ag/Ag(100)", "Fronts, Fluctuations, Growth" Conf. @ MCTP U Mich, May 2002.
- (P) "Sintering of 2D Nanoclusters on Metal(100) Surfaces", *ibid*, U Michigan, May 2002.
- (T) "Atomistic Modeling of Mound Evolution: Ag/Ag(100) Homoepitaxy", Fall MRS, Boston, Dec 2001.
- (S) "Mathematical Modeling of Nanostructure Evolution in Thin Films", ISU Math Dept, Spring, 2001.
- (T) "Predictions of Island Nucleation: Etch Pits on Si(100)", March APS, Minneapolis, March 2000.
- (T) "Percolative Diffusion...Influence on Chemical Wave Propagation", 218th Nat. ACS, New Orleans, Aug 1999.
- (S) "Spatiotemporal Behavior in Catalytic Surface Reactions", Ames Lab Chem. Sci. Review, May, 1999.
- (T) "Cluster-Step and Cluster-Cluster Coalescence... in Ag/Ag(100)", 44th AVS, San Jose, CA, October, 1997.
- (T) "Temperature Dependence of Metal(100) Homoepitaxial Growth", APS, Kansas City, Mar 1997.
- (S) "Chemical Waves in Surface Reactions", Physical Chemistry Seminar, ISU, October, 1996.
- (T) "Submonolayer..Growth & Multilayer Kinetic Roughening...for Ag/Ag(100)", 10th ACCG, Vail, CO Aug 1996.
- (P) "Non-Linear Diffusion and Wave Propagation in Surface Reactions", SIAM, Kansas City, July, 1996.
- (P) "Spatiotemporal Behavior in Surface Reactions", 10th DOE Conf. Catalysis/Surface Chem, Texas, May, 1996.
- (S) "Spatiotemporal Behavior in Catalytic Surface Reactions", Ames Lab Chem. Sci. Review, May, 1996.
- (T) "Microscopic Models for Chemical Waves in Surface Reactions", 42nd AVS, Minneapolis, Oct 1995
- (T) "Interface Propagation and Nucleation Phenomena for First-Order Poisoning Transitions," Symp. on "Phase Transitions in Catalytic Surface Reaction Models," IMA, U. Minnesota, June 1994. (1 hr talk).
- (P) "Spatiotemporal Behavior in Surface Reactions," 9th DOE Conf. Catalysis/Surface Chem, WI, May 1994.
- (S) "Modeling of Spatiotemporal Behavior in Surface Reactions," Ames Lab Chem Sci Prog Review, May 1993.
- (T) "Irreversible Island Formation during Deposition: Sizes, Separations, etc," March APS, Seattle, 1993.
- (S) "Modeling Surface Reactions: Reaction-Diffusion Equ vs Stochastic Models," Math ISU, Dec. 1992.
- (P) "Irreversible Island Formation in Surface Deposition: Sizes & Separations", MRS, Boston, Nov. 1992.
- (T) "Island Separation Scaling in Non-Equilibrium Surface Deposition," 39th AVS, Chicago, Nov. 1992.
- (P) "Island Size Scaling in Surface Diffusion Processes," STATPHYS-18, Berlin, August, 1992.
- (T) "Kinetic Phase Diagrams for Surface Reactions: Unification of MF and LG Behavior," *ibid*, 1992.
- (T) "Relationship between Film Growth Mech., Roughening & Bragg Oscillation Decay," APS, Indiana, Mar. 1992
- (T) "Hybrid Model for CO-Oxidation on Surfaces: Mean-Field CO and Lattice-Gas O," *ibid*, Mar. 1992.
- (P) "Spatiotemporal Behavior in Surface Reactions," 8th DOE Conf Catalysis/Surface Chem, CA, March 1992.
- (S) "Kinetic Phase Transitions, Catalytic Reactions, Epidemics," Math Physics, ISU, May 1991.
- (T) "Epidemic Picture of Kinetics at 1st Order Catalytic Poisoning Transition," APS, Cincinnati, Mar 1991.
- (T) "Interface Scaling applied to Models for Low-T Epitaxial Growth on fcc(100) Substrates," *ibid*, 1991.
- (T) "Interface Scaling for Analysis of Low-T Epitaxial Growth," AVS MN Ch., Minneapolis, Feb. 1991.
- (T) "Kinetics near 1st Order Poisoning Transition," 5th LASST Workshop Interface Phenom, Bar Harbor, Aug 1990.
- (P) "Percolative Structure in Chemisorption & Epitaxial Growth," GRC - Fractals, Plymouth, Aug, 1990.
- (P) "Downward Funneling Model of Low-Temp. Epitaxial Growth," 3rd Int. ISCC, UW-Milwaukee, July 1990.

- (T) "Characterizing the Evolution of Non-Equilibrium Structure During Adsorption," *ibid*, July 1990.
- (S) "Equilibrium vs Non-Equilibrium Structure: Cl/Ag(100) vs O/Fe(100)," *Phys. Chem.*, ISU, Mar 1990.
- (S) "Low-Temperature Epitaxial Thin-Film Growth," Solid State Physics Seminar, ISU, Nov 1989.
- (S) "Modeling Adsorption Processes: Structure and Kinetics," Math Dept Colloquium, ISU, Sept 1989.
- (T) "Low-Temp. Epitaxial Growth: Influence of Adsorption Site Geometry," APS, St. Louis, Mar 1989.
- (S) "Non-Equilibrium Microstructure of Surface Adlayers," Solid State Physics Seminar, ISU, Oct 1988.
- (P) "Percolative Aspects of Non-equilibrium Adlayer Structure," 34th AVS, Anaheim, Nov. 1987.
- (P) "Multi-Cluster Growth on Lattices via Cooperative Filling," STATPHYS-16, Boston U., Aug. 1986.
- (T) "Multi-Cluster Growth via Irreversible Cooperative Filling," UC Stat. Mech. Mtg, Davis, Mar. 1986.
- (S) "Kinetics & Statistics of Clustering, Growth and Aggregation Processes," Chemistry, ISU, Sept. 1985.
- (S) "Irreversible Cooperative Adsorption & Reaction Processes," Solid State Physics, ISU, Mar. 1985.
- (T) "Irreversible Random & Cooperative Processes on Lattices," 51st Stat. Mech. Mtg Rutgers, May 1984.
- (T) "Irreversible Adsorption onto Lattices: Spatial Corr. etc," 16th Midwest Theo. Chem. Conf., NWU, May 1983.
- (P) "Factorization Relations etc for Dissociative Collisions," 15th Midwest Theo Chem Conf, Mich SU, April 1982.
- (P) "Reactive Quantum Boltzmann Eqn from ACQM," GRC - Few Body Problems, Wolfeboro, August 1981.
- (P) "Non-Equil. Adlayers from Irreversible Chemisorption," Int. Conf Phase Trans Surfaces, U. Maine, Aug 1981.
- (P) "Factorization Relations etc in the Sudden Approx," 14th Midwest Theo Chem Conf., U. Chicago, May 1981.
- (P) "Exact Solution for some IVP's in Kinetic Theory," 14th Int. Conf. Thermo & Stat Mech, Edmonton, Aug 1980.
- (T) "Exact Results for Non-Equilibrium Models of Surface Adsorption," *ibid*, Alberta, August 1980.
- (T) "Reactive Quantum Boltzmann Equation from Arrangement Channel BBGKY Hierarchy," *ibid*, 1980.
- (S) "The Kinetics of Chemically Reactive Systems," Physical Chemistry Seminar, ISU, March 1980.
- (P) "Completeness for Faddeev Equations in Differential Form," GRC-Few Body Problems, Wolfeboro, Aug 1979.