

CURRICULUM VITAE OF AMIT CHAKMA

PRESENT POSITION

Vice-President (Academic) and Provost, and
Professor of Chemical Engineering, The University of Waterloo

EDUCATION

Ph.D. in Chemical Engineering	University of British Columbia Vancouver, BC, Canada	1984-1987
M.A.Sc., Chemical Engineering FIRST CLASS STANDING	University of British Columbia Vancouver, BC, Canada	1982-1984
Dipl. Ing. in Chemical Engineering Gas Engineering Specialization FIRST IN GRADUATING CLASS	Institut Algerien du Petrole Boumerdes, Alger, Algeria	1977-1982
Cours de Civilisation Francaises	Universite de Caen, France	1978

LEADERSHIP AWARDS

Canada's Top 40 Under 40 Award. 1998
Awarded annually to honour a group of men and women
who have become outstanding leaders in their chosen fields,
before reaching 40 years of age (www.top40award-canada.org)

OTHER AWARDS/HONOURS

Guest Professor, Peking University, China	2001
Distinguished Lecturer, APEGS	2000
Canadian Who's Who. (www.utpress.utoronto.ca/cww)	2000
Consulting Professor, Wuhan University of Hydraulic and Electrical Engineering.	2000
Adjunct Professor, Hunan University, Changsa, China.	1998
Consulting Professor, Huazhong Univ. of Science & Technology, China.	1998
NSERC Post Doctoral Fellowship.	1987

MANAGEMENT TRAINING

Senior University Administrators Course (SUAC).	Centre for Higher Education Research & Development, U. of Manitoba	1997
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ADMINISTRATIVE/LEADERSHIP EXPERIENCE:

Vice-President Academic and Provost	University of Waterloo	2001 – present
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	Waterloo, ON., Canada	
Vice-President (Research)	University of Regina Regina, Saskatchewan, Canada	1999 – 2001
Dean, Faculty of Engineering	University of Regina	1996 – 1999
Chair, Young Professors Group	University of Calgary	1995 – 1996

BOARD / COUNCIL MEMBERSHIPS

Health Force Ontario Marketing and Recruitment Agency		2007-present
Communitech Inc.		2006-present
Waterloo North Hydro Inc.		2006-present
Board of Trustee, St Mary’s Hospital, Kitchener,		2005- present
Canada’s Technology Triangle, Inc.,		2004- present.
Canadian Knowledge Research Network,		2004 – 2007
Canadian National Site Licensing Project Steering Committee,		2000- 2004
University Advisory Group, Industry Canada		2000- 2003
Calgary Centre for Innovative Technology, Calgary, Alberta.		2000– 2002
Natural Sciences and Engineering Research Council of Canada, (www.nserc.ca)		1999- 2002
WestLink Innovation Network Ltd, Edmonton, Alberta (www.westlink.ca)		1999- 2001
Technology Networking Board, Regina Regional Economic Dev. Authority.		1999- 2001
Regina Research Park Advisory Board.		1999- 2001
Saskatchewan Population Health and Evaluation Research Unit, Canada.		1999- 2001
Telecommunications Research Labs, Edmonton, Canada. (www.trlabs.ca)		1999- 2001
Saskatchewan Research Council, Saskatoon, Canada. (www.src.sk.ca)		1997- 2000
Petroscience Research Ltd, Calgary, Canada.		1991- present

TEACHING EXPERIENCE:

Professor of Chemical Engineering	University of Waterloo	2001-present
NRCan Research Professor of Engineering	University of Regina	1999 – 2001
Professor of Environmental Engineering	University of Regina	1996 – 2001
Adjunct Professor of Chemical and Petroleum Engineering	University of Calgary Calgary, Alberta, Canada	1996 - present
Professor of Chemical and Petroleum Engineering	University of Calgary Calgary, Alberta, Canada	1994 - 1996
Visiting Senior Lecturer of	University of Auckland,	1992 - 1992

Chemical & Materials Engineering	Auckland, New Zealand.	
Associate Professor of Chemical and Petroleum Engineering	University of Calgary Calgary, Alberta, Canada	1990 - 1994
Assistant Professor of Chemical and Petroleum Engineering	University of Calgary Calgary, Alberta, Canada	1988 - 1990
Attache de Recherche Dept. of Chemical Engineering	University of Sherbrooke Sherbrooke, Quebec, Canada	1988 - 1988

OTHER INTERNATIONAL AFFILIATIONS

Visiting Professor	Petroleum and Petrochemical College, Chulalongkorn University, Thailand.	1997 - present
Expert Consultant	Asian Development Bank, Phillipines	1996 – 1997
Technical Consultant	Ministry of University Affairs, Thailand	1996 – 1997
Member Expert Group, IEA Green House Gas R&D Programme	Cheltenham, England, U.K.	1992 – 1996

PROFESSIONAL EXPERIENCE

Registered Professional Engineer (P.Eng.), The Province of Alberta, Canada	1990 - present
Registered Professional Engineer (P.Eng.), The Province of Saskatchewan, Canada	1997 - 2001

TECHNICAL ADVISOR

Advised many petroleum and engineering companies and research organizations, universities and government agencies in Canada, Colombia, Indonesia, Japan, The Netherlands, Norway, and the United States.

RESEARCH INTERESTS:

- Mass Transfer, Gas Separation, Membrane Separation, Air Pollution,
- CO₂ Related Green House Gas Issues, Environmental system modeling.
- Waste Water Treatment in Jet Reactors
- Heat Transfer and Fluid Flow in Porous Media
- In-situ Remediation of Contaminated Soils
- Applications of AI and Advanced Control Technologies in Environmental Control Systems.

EDITORIAL RESPONSIBILITIES

Associate Editor, Journal of Environmental Informatics	2003 - present
Guest Editor, Special Issue on Gas Processing, Chemical Engineering Communications.	1994 - 1995
Member, Editorial Board, Environmental and Software News.	1993 - 1996
Technical Editor, SPE Editorial Review Committee.	1992 - 1994
Editor, Enhanced Oil Recovery, AIChE Symposium Series 280, Volume 87, 147 pages, AIChE, NY, 1991.	1990 - 1991
Member, Editorial Review Board, Journal of Canadian Petroleum Technology.	1989 - 1993

PROFESSIONAL SERVICE

Chair, Site Visiting Committee, NSERC Industrial Research Chair Program	1999 – 2000
Program Visitor, Canadian Engineering Accreditation Site Visiting Committee	1999 - 2000
Member, Technology Issues Table, National Implementation Plan on Climate Change.	1998 – 1999
Member, Regina Urban Environmental Advisory Council	1998 - 1999
Chair, Council of Western Engineering Deans.	1998 – 1999
Chair, Software Engineering Committee, National Council of Deans of Engineering and Applied Sciences (NCDEAS).	1997 – 1999
Member, Advisory Council of NSERC/Petro-Canada Chair for Women in Science and Engineering (Prairie Region).	1997 – 2001
Member, Canadian Engineering Accreditation Board Liaison Committee, National Council of Deans of Engineering and Applied Sciences (NCDEAS).	1996 – 1999
Member, Environmental Clusters Group, Regina Economic Development Authority.	1996 – 1999

PROFESSIONAL AFFILIATIONS:

The Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA).
The Canadian Society for Chemical Engineering (CSCChE).
The Chemical Institute of Canada (CIC).
The Petroleum Society of the Canadian Institute of Mining (CIM).
The American Institute of Chemical Engineers (AIChE).
The Society of Petroleum Engineers (SPE).

CONFERENCE CHAIRMANSHIP/PANELLISTS

Member, International Program Committee, Fifth International Conference on Greenhouse Gas Control Technologies to be held in Cairns, Australia, August 2000.	1999 - 2000
Chair, Eight Saskatchewan Petroleum Conference, Regina, October 1999.	1999 – 1999
Member, International Advisory Board, 3 rd International Conference on Solvothermal Reactions and processes, Bordeaux, July 19-23, 1999.	1998 – 1999
Member, International Scientific Committee, International Workshop on Sustainable Management of Water, Wuhan, China, May 2-15, 1998.	1998- 1998
Member, International Program Committee, Fourth International Conference on Greenhouse Gas Control Technologies held in Interlaken, Switzerland, August 30-September 2, 1998.	1997 - 1998
Member, International Program Committee, Third International Conference on Carbon Dioxide Removal (ICCDR-3), held in Boston, MA, September 9-11, 1996.	1995 - 1996
Member, International Advisory Committee, Second International Conference on Solvothermal Reactions, held in Takamatsu, Kagawa, Japan, December 18-20, 1996.	1995 – 1996
Co-Chair, Symposium on CO ₂ Chemistry and Efficient Utilization of Energy, PACIFICHEM'95, Honolulu, Hawaii, December 17-22, 1995.	1994 - 1995
Area Chair, Gas Processing, 44th Canadian Chemical Engineering Conference.	1993 - 1994
Panelists, Forum on High Performance Computing at The University of Calgary, March 3.	1993
Chairman, Symposium on Natural Gas Processing, 41st Annual Canadian Chemical Engineering Conference, Vancouver, BC.	1991
Chairman, Symposium on Enhanced Oil Recovery, AIChE Annual Meeting, Chicago.	1990
Chairman, Symposium on High Efficiency Absorbers, AIChE Spring National Meeting, Orlando, FL.	1990
Co-chairman, Symposium on Heavy Oil Upgrading to Refining, Canadian Society for Chemical Engineering, Calgary.	1990
Chairman, Symposium on Enhanced Oil Recovery, AIChE Summer National Meeting, Philadelphia, PA.	1989

OTHER SCHOLARLY ACTIVITIES

Reviewer for the following agencies and scholarly journals:

Natural Sciences and Engineering Research Council of Canada, Canada Council for the Arts, Canadian Journal of Chemical Engineering, Chemical Engineering Communications, Journal of Canadian Petroleum Technology, Canadian Journal of Physics, Journal of Hazardous Materials, ASME Journal of Energy Resources Technology.

UNIVERSITY COMMITTEE RESPONSIBILITIES:

University of Waterloo

Vice-Chair, Senate, University of Waterloo (2001- present).

Chair, Senate Long Range Planning Committee, University of Waterloo (2001-present).

Chair, Dean's Council, University of Waterloo (2001-present)

Chair, Vice-President University Research Nominating Committee, 2005.

Chair, Decanal Nominating Committees (Faculty of Arts, Applied Health Sciences, Engineering, Environmental Studies, Mathematics, Dean of Graduate Studies, Science)

Co-Chair, Faculty Relations Committee, University of Waterloo (2001-present)

Member, Pension and Benefits Committee, Board of Governors, University of Waterloo (2001-present)

University of Regina

Chair, Research Chair Advisory Committee, The University of Regina (2001 – 2001)

Chair, Committee to review the Director of Information Services, The University of Regina (2001).

Chair, President's Research Committee, The University of Regina (1999-2001)

Chair, Governing Committee on University Centres and Institutes (1999-2001)

Chair, University Promotion Committee, The University of Regina (1999-2001)

Chair, President's International Committee, The University of Regina (1999-2001)

Chair, CFI Steering Committee, The University of Regina (1999-2001)

Member, Planning and Priorities Committee (1999-2001)

Member, Dean of Engineering Search Committee, University of Regina (1999-2000).

Member, Dean of Education Search Committee, University of Regina (1999-2000).

Member, Presidential Search Committee, The University of Regina (1997-1998)

Member, President's Advisory Committee on Racial Harassment, U. of Regina (1997-1999)

Member, Executive Committee of the Senate, The University of Regina (1997-2001)

Member, CFI Steering Committee, The University of Regina (1997-1999)

Member, Graduate Studies Review Committee of Dean's Council, U. of Regina. (1997-1998)

Member, Senate, University of Regina (1996-2001)

Member, Executive of Council, University of Regina (1996-2001)

RESEARCH GRANTS:

Title	Granting Agency	Amount	Years
Novel CO ₂ Separation processes for NSERC Discovery Grant GHG Mitigation		\$ 46,600/year	2003-2007
Molecular Design and Solvent Development For CO ₂ Capture from Industrial Gas Streams	NSERC Strategic Project	\$ 172,500/year	2003-2006
Int. Test Centre for CO ₂ Capture	Canada Foundation for	\$ 4,500,000	2002-2002

(Tontiwachwuthikul et al.)	Innovation/Sask. Innovation Fund/others		
Greenhouse Gas Control Technology Centre	WED and Sask. Econ. and Co-op Dev.	\$ 5,660,000	2001-2003
Real-Time Liquid Droplet Analyzer	NSERC Equipment Grant	\$ 99,332	2001-2002
Int. Test Centre for CO ₂ Capture	WED and Sask. Econ. and Co-op Dev.	\$ 3,000,000	2000-2001
An information system for assessing and Managing environmental risks of air Pollution from petroleum industries (Huang, Chakma and Tontiwachwuthikul)	NSERC Strategic Project	\$ 85,000 \$ 89,000 \$ 89,000	2000-2001 2001-2002 2002-2003
Development of an Information System For Supporting Climate-Change Impact Studies Within the Prairie's Energy Sector (Huang et al.)	Natural Resources Can.	\$ 52,500	2000-2001

RESEARCH GRANTS:

Title	Granting Agency	Amount	Years
Adaptation Strategy of Petroleum Industries in Western and Northern Canada under Changing Climatic and Economic Conditions (Huang and Chakma.)	Prairie Adaptation Research Cooperative (PARC)	\$ 12,000	2000-2000
CO ₂ Capture Test Facility	SaskPower	\$ 300,000	1999-2002
Liquid Chromatography Mass Selective Detector (Tontiwachwuthikul & Chakma)	NSERC Equipment Grant	\$ 99,056	1999-1999
New Solvent development and Mass Transfer Studies for Simultaneous Separation of SO ₂ and CO ₂ (Tontiwachwuthikul et al.)	NSERC Strategic Project	\$ 95,000 \$ 91,500 \$ 88,500	1999-2000 2000-2001 2001-2003
Mass Transfer in Formulated Gas Treating Solvents and Foamy Oil Flow (A. Chakma)	NSERC Research Grant	\$ 29,610/year	1999-2003
Sustainable Heavy Oil Research Facility (Islam, Chakma, Tontiwachwuthikul & Huang)	Canada Foundation for Innovation/PTRC	\$ 2,381,798	1999-1999
Potential of Greenhouse Gas Storage and Utilization through Enhanced Oil recovery (Islam, Huang and Chakma)	PTRC	\$ 260,000	1998-1999
Development of Integrated Information and Decision Support System for Petroleum Waste Management (Chakma et al.)	NSERC Strategic Projects	\$ 258,000	1997-2000
CO ₂ Separation Using Activated Carbonate	NSERC IOR	\$ 200,000	1997-2000

Solvents: Studies of Corrosion, Solvent Stability & Absorption Characteristics	& Saskferco Inc.		
Role of Foamy Oil Flow in Cold Lake Reservoirs	Alberta Energy	\$ 168,000	1997-2000
Risk Assessment and Decision Analysis for Site Contamination Problems at Hoosier Gas Plant and Cantuar Field Tank (Huang and Chakma)	TransGas and NSERC IOR Grant	\$ 41,600	1997-1999
GC/MS for Energy and Environmental Research	NSERC Equipment Grant	\$ 80,385	1997-1998
Foam Flow in Porous Media	NSERC IOR Grant	\$ 75,000	1994-1997
Foam Flow in Porous Media	Petroleum Recovery Inst.	\$ 75,000	1994-1997
Mass Transfer in Formulated Gas Treating Solvents and Foamy Oil Flow	NSERC Research Grant	\$ 95,200	1995-1999
Novel Gas Treating Processes and Enhanced Oil Recovery	NSERC Research Grant	\$ 66,000	1993-1995

RESEARCH GRANTS: (Cont'd..)

Title	Granting Agency	Amount	Years
Membrane Reactors	Japan Science and Tech. Fund (JSTF) Grant	\$ 8,684	1993- 1994
Mass Transfer Studies in Bubble Columns For Low Volume Gas Processing at the U of Auckland	NSERC International Collaborative Research Grant	\$ 7,400	1991-1992
Gas Analyzer and Mass Flow Control System	NSERC Equipment Grant	\$ 15,148	1991-1992
Modelling of CANMET/U de S High Shear Hydrovisbreaking Reactor	EMR/NSERC	\$ 13,500	1991-1992
Ultrasonic Visbreaking of Alberta Bitumens/Diluent Mixtures	URGC Pilot Study	\$ 4,500	1991-1992
Development of a Purification Technique For Degraded DEA Solutions	NSERC/AMOCO CRD Grant	\$ 243,000	1990-1993
Microbial Transport in Porous Media	ESSO Resources Canada	\$ 97,000	1990-1992
Contraves Rheometer	NSERC	\$ 38,064	1990-1991
Modelling of CANMET/ UdeS High Shear Jet Reactor	Energy, Mines and Resources Canada	\$ 11,250	1990-1991
Novel Gas Treating Processes	NSERC Operating Grant	\$ 54,000	1989-1992
Flow of Gas-Oil Mixtures in Deviated Wells (with J. Stanislav)	Energy, Mines and Resources Canada	\$ 21,000	1989-1991
Gas Chromatographic Method for Analyses of Amine Solutions	CGPA	\$ 36,000	1989-1991

Coprocessing of Coal and Bitumen Bitumen with Molten Halide Catalysts	Alberta Energy	\$ 70,000	1989-1990
Immobilized Liquid Membranes for Selective CO ₂ Permeation from Ethane	AMOCO Canada Petroleum Co. Ltd.	\$ 40,000	1989-1990
Study of Kinetics and Mass Transfer Rates for CO ₂ - Hindered Amine Systems	URGC Starter Grant	\$ 4,000	1988-1990
Pilot Plant Studies on CO ₂ Absorption by Hindered Amines	AMOCO Canada Petroleum Co. Ltd.	\$ 5,000	1989-1990
Scaled Model Studies on Electromagnetic Heating and Inert Gas Injection in Horizontal Wells	Energy, Mines and Resources Canada	\$ 245,600	1989-1992

OTHER GRANTS :

Title	Granting Agency	Amount	Years
China-Canada Flooding Control, Ecological Protection, and Sustainable Development (Huang et. al.)	CIDA UPCD Tier 2	\$ 750,000	1999-2004
GHG Technology Centre Design	WED	\$ 200,000	1999-2000
Scoping Study for the Setting up of Canadian GHG Control Technology Centre	NRCan/WED/Sask Energy & Mines	\$ 20,000	1998-1999
Establishment of Electronic Classrooms At U of R and U of S to facilitate course Exchange. (with F. Berruti)	Sask. Post Secondary Education & Skills Training.	\$ 40,000	1997

TEACHING:

Undergraduate Courses:	Technology and Society, Unit Operations, Chemical Engineering Laboratory I, Chemical Reaction Engineering, Mass Transfer, Air Pollution, Water Pollution.
Graduate Courses:	Advanced Topics in Mass Transfer, Natural Gas Processing Principles, Natural Gas Processing Technology, Petroleum Waste Management, Environmental Management, Sustainable Development, Energy Systems.
Continuing Ed Courses:	Natural Gas Processing, Natural Gas Utilization, LNG Engineering, Air Pollution Engineering, Physical and Chemical Properties of Natural Gas.

INVITED LECTURES

1. "Recent Developments in Gas Conditioning." Bangladesh Petroleum Institute and Bangladesh University of Engineering and Technology sponsored seminar, August 13-14, 1990.
2. "Diethanolamine Degradation and Reclamation - A Researcher View", AMOCO Sour Gas Handling Symposium, Banff, September 24-29, 1990.
3. "Coproducting of Bitumen and Coal with Molten Halide Catalysts", Alberta Coal Research Contractors' Conference, Calgary, Alberta, October 30-31, 1991.
4. "Acid Gas Separation Using Immobilized Liquid Membranes", presented at the 1992 Lawrence Reid Gas Conditioning Conference, held at the University of Oklahoma, Norman, March 1992.
5. "Formulated Amines - Challenges and Opportunities For the Gas Processors ", presented at the Third Quarterly Meeting of the Canadian Gas Processors Association, Calgary Convention Centre, September 11, 1992.
6. "Applications of Adsorption Processes in the Petroleum Industry ", presented at the Department of Chemical Engineering, University of Ottawa, November 11, 1992.
7. "Facilitated Transport in Immobilized Liquid Membranes - Application to Gas Separation", presented at the Department of Chemical Engineering, University of Ottawa, November 11, 1992.
8. "Microcomputer Applications of Management of Petroleum Waste", Invited Lecture, Computers and Environment General Meeting, Calgary, June 8, 1993.
9. "Politics of Environment and Development - The Alberta Experience", Invited Plenary Lecture, International Pre-Symposium on Environmental Information Science in Cold Regions, Kitami, Hokkaido, Japan, July 3-4, 1993.
10. "Facilitated Transport in Membranes - From Biological Systems to Chemical Processing", Chemical Society of Japan lecture, presented at the Kitami Institute of Technology, Kitami, Japan, July 5, 1993.
11. "Catalytic Membranes - New Horizon in Separation", Catalysis Society of Japan Lecture, presented at the Kitami Institute of Technology, Kitami, Japan, July 8, 1993.
12. " Membrane Reactor Applications in Thermodynamically Limited Reactions - A Case Study of H₂S Decomposition", presented at the Seikei University, Tokyo, Japan, July 20, 1993.
13. "Gas Separation Membranes - Application to CO₂ Removal", presented at the Symposium on CO₂ Chemistry, Organized by the Swedish Royal Institute of Technology and the Swedish Chemical Society, Hemavan, Sweden, September 20-23, 1993.
14. "Coke, Lungs, Gas Reservoirs and The Carbon Dioxide Connection", Faculty of Engineering 1994 Leading Edge Lecture Series, presented at the University of Calgary, April 15, 1994.
15. "In Search of an Ideal CO₂ Separation Process", Presented at the University of Laval, Quebec City, Canada, September, 1994.
16. "An Energy Efficient Mixed Solvent for the Separation of CO₂", Presented at the 2nd International Conference on Carbon Dioxide Removal held in Kyoto, Japan, 25 - 27th October, 1994.

INVITED LECTURES (Cont'd..)

17. "Simultaneous Separation of CO₂ and SO₂ From Flue Gas Streams by Liquid Membranes", Presented at the 2nd Int. Conference on Carbon Dioxide Removal held in Kyoto, Japan, 25 - 27th October, 1994.
18. "Environmental Issues in the Alberta Agricultural Sector", Invited Plenary Lecture, International Symp. on Environmental Information Science in Cold Regions, Kitami, Hokkaido, Japan, October, 1994.
19. "Electromagnetic Heating of Heavy Oil Reservoirs - A Novel Method of Heavy Oil Production", presented at a Meeting on Technologies of Oil Recovery from Oil Sand Reservoir, University of Tokyo, Japan, December 9, 1994.
20. "Jet Reactor Concept - A Novel Method for the Upgrading of Heavy Oil and Bitumens by Solvo-Thermo-Mechanical Means", presented at the First Int. Solvo-Thermal Conference, Kagawa Prefecture, Japan, Dec. 5 - 7, 1994.
21. "CO₂ Production for Enhanced Oil Recovery in Canada: Current Issues", presented at the Sixth Saskatchewan Petroleum Conference held in Regina, October 16-18, 1995.
22. "Separation of CO₂ from Power Plant Flue Gases and Its Subsequent Disposal - Is It a Viable Option", presented at the Int. Chemical Congress of Pacific Basin Societies", held in Honolulu, Hawaii, December 17-22, 1995.
23. "Electromagnetic Heating of Heavy Oil Reservoirs - A Novel Method of Heavy Oil Production", presented at the Conference on t technologies of Oil Recovery from Oil Sand Reservoir, University of Tokyo, Japan, December 9, 1994.
24. "Engineering Education in a Global Economy - Meeting Our Challenges", presented at the Southern Saskatchewan Section Meeting of the Petroleum Society of CIM, Regina, October 3, 1996.
25. "Heavy Oil Recovery via Solvo-Thermal Reactions Assisted by Electromagnetic Heating", presented at the First International Solvo-Thermal Conference, Kagawa Prefecture, Japan, December 18-20, 1996.
26. "Supercritical Extraction of Tar Sands Bitumen", presented at the International Conference on High Pressure Science and Technology, Kyoto, Japan, August 25-29, 1997.
27. "Technical Partnerships - Doers and Users", Seventh Saskatchewan Petroleum Conference, Regina, October 20, 1997.
28. "Research Potential and Needs to Improve Carbon Dioxide Separation Efficiency", Greenhouse Gas Abatement Technology Screening Group Meeting, Regina, March 23, 1998.
29. "Potential Consequences of Kyoto Accord for Canadian Industry", Canadian Prairie Group of Chartered Engineers Annual Meeting, Calgary, AB., April 8, 1998.
30. "Greenhouse Gases, Kyoto and the Environment", Annual Meeting of the Calgary Chapter of Sigma Xi, Calgary, AB., April 9, 1998.
31. "Industrial Waste Water Management Challenges in Canada", International Workshop on Barriers to Sustainable Management of Water Quantity and Quality, May 12-15, 1998, Wuhan, China.
32. "Designer Solvents for Energy Efficient CO₂ Separation from Flue Gas Streams", Fourth International Conference on Greenhouse Gas Control Technologies, Interlaken, Switzerland, August 31, 1998.

INVITED LECTURES (Cont'd..)

33. "Energy Technology Futures 2020", Energy Technology Futures Project Focus Group, Calgary, AB., December 15, 1999.
34. "Petroleum Technology Research Centre: Who, What, Where and Why?", Petroleum Society of CIM, South Saskatchewan Section Luncheon Meeting, January 18, 1999.
35. "Energy Futures, GHG Challenge and Canadian Opportunities", Association of Professional Engineers and Geoscientists of Saskatchewan Distinguished Lecture 2000, Lloydminster SK - March 20, 2000; Estevan SK. - March 30, 2000.
36. "Climate Change and the Future of Natural Gas Industry", Keynote speaker, Canadian Gas Association Gas Measurement School, June 6, 2000, Regina, SK.
37. "International Test Centre for CO₂ Capture", Int. Energy Agency Greenhouse Gas R&D Program Open Forum, Regina, Saskatchewan, Canada, March 26, 2001.

PATENT

1. Dawson, W.H., E. Chornet, R.P. Overend, **A. Chakma** and J.P. Lemmonier, "Process for Reducing the Viscosity of Heavy Hydrocarbon Oils." U.S. Patent No. 5,096,566, March 17, 1992.

PUBLICATIONS LIST

MONOGRAPHS/BOOK CHAPTERS

1. Chakma, A., M.R. Islam and F. Berruti (Editors) (1991), "Enhanced Oil Recovery", AIChE Symposium Series 280, Volume 87, 147 pages, AIChE, NY.
2. Chakma, A. (2000), "Kinetics and Mechanisms of Asphaltene Reactions During Petroleum Recovery and Processing", in "Asphaltenes and Asphalts, 2.", T.F. Yen and G.V. Chilingarian (editors), Elsevier Publishers, Amsterdam.

BOOK REVIEWS

1. "Interfacial Phenomena in Petroleum Production", (Editor N.N. Morrow), Marcel Dekkar, New York, 1991, 449 pages, Canadian Journal of Chemical Engineering, 71 (3), 493-494, 1993.
2. "Asphaltenes and Asphalts", 1, T.F. Yen and G.V. Chilingarian, Elsevier Science B.V., Amsterdam, 1994, Journal of Petroleum Science and Engineering, 17, 387-388, 1997.

REFEREED ARTICLES

1. Chandnani, P.P., A. Chakma and J. Liemezs (1984), "Comparison of Benedict-Webb-Rubin and BACK Equations of State For Use in PVT Calculations." *Thermochimica Acta*, 82, 263-275.
2. Chakma, A. and A. Meisen (1986), "Corrosivity of DEA Solutions and Their Degradation Products." *Ind. Eng. Chem. Prod. Res. Dev.*, 25 (4), 627-630.
2. Chakma, A., J. Liemezs and M.R. Islam (1987), "Saturated Vapour Liquid Equilibria Calculation with Modified Martin Equation of State." *Thermochimica Acta*, 111, 311-319.
3. Chakma, A. and A. Meisen (1987), "Degradation of Aqueous DEA Solutions in a Heat Transfer Tube", *Canadian Journal of Chemical Engineering*, 65 (2), 264-273.
4. Agarwal, R.K., A. Chakma and J. Liemezs (1987), "Use of Modified Martin Equation for Unsaturated Vapour and Liquid States." *Thermochimica Acta*, 118, 17-23.
5. Chakma, A. and A. Meisen (1987), "Solubility of CO₂ in Aqueous Methyl-diethanolamine (MDEA) and N,N,-Bis(hydroxyethyl) piperazine Solutions", *Ind. Eng. Chem. Research*, 26 (12), 2461-2466.
6. Chakma, A. and A. Meisen (1988), "Identification of Methyl-diethanolamine Degradation Products by GC and GC/MS", *Journal of Chromatography*, 457, 287-297.
7. Chakma, A., E. Chornet, R.P. Overend and W.H. Dawson (1989), "Hydrocracking of Athabasca Coker Feed Bitumen in a Bubbling Microautoclave", *Energy and Fuels*, 3 (2), 144-147.
8. Chakma, A., J.P. Lemmonier, E. Chornet and R.P. Overend (1989), "Absorption of CO₂ by Aqueous Triethanolamine (TEA) Solutions in a High Shear Jet Absorber", *Gas Separation and Purification*, 3 (2), 65-70.
9. Chakma, A. and A. Meisen (1989), "Activated Carbon Adsorption of Diethanolamine and Methyl-diethanolamine Degradation Products", *Carbon*, 27 (4), 573-584.
10. Islam, M.R., A. Chakma, and K. Nandakumar (1989), "Cellular Pattern Evolution in an Inclined Porous Medium with Internal Heat Generation", *AIChE Symposium Series*, 85 (269), 338-343.
11. Chakma, A. and A. Meisen (1990), "Improved Kent-Eisenberg Model For Predicting CO₂ Solubility in Aqueous Diethanolamine (DEA) Solutions", *Gas Separation and Purification*, 4 (1), 37-40.
12. Hu, W. and A. Chakma (1990), "Modelling of Equilibrium Solubility of CO₂ and H₂S in Aqueous Diglycolamine (DGA) Solutions", *Canadian Journal of Chemical Engineering*, 68 (3), 523-525.
13. Islam, M.R., A. Chakma (1990), "Simulation of Activated Carbon Adsorbers Used in Gas Plants", *Gas Separation and Purification*, 4 (2), 103-108.
14. Chakma, A., E. Chornet, R.P. Overend and W.H. Dawson (1990), "Absorption of CO₂ by Aqueous Diethanolamine (DEA) Solutions in a High Shear Jet Absorber", *Canadian Journal of Chemical Engineering*, 68 (4), 592-598.
15. Hu, W. and A. Chakma (1990), "Modelling of Equilibrium Solubility of CO₂ and H₂S in Aqueous Amino Methyl Propanol (AMP) Solutions", *Chemical Engineering Communications*, 94, 53-61.
16. Chakma, A. and M.R. Islam (1990), "Modelling of Visbreaking in a Jet Reactor", *Chemical Engineering Science*, 45 (8), 2769-2775.
17. Islam, M.R., A. Chakma, and K. Nandakumar (1990), "Flow Transition for Natural Convective Heat Transfer in a Porous Medium Saturated with Water Near 4°C", *Canadian Journal of Chemical Engineering*, 68 (5), 777-785.

18. M.R. Islam and A. Chakma (1991), "Mathematical Modelling of Enhanced Oil Recovery by Alkaline Solutions in the Presence of Cosurfactant and Polymer", *Journal of Petroleum Science and Engineering*, 5(2), 105-126.
19. Jamaluddin, A.K.M., N.E. Kalogerakis and A. Chakma (1991), "Prediction of CO₂ Solubility and CO₂ Saturated Liquid Density of Heavy Oils and Bitumens Using a Cubic Equation of State", *Fluid Phase Equilibria*, 64, 33-48.
20. C. Kowalski, F. Berruti, A. Chakma, A. Gianetto and M.R. Islam (1991), "A Preliminary Mechanistic Model For Microbial Transport Through Porous Media", *AIChE Sympo. Series No. 280*, 87, 123-133.
21. Islam, M.R. and A. Chakma (1992), "New Concepts of Combining Electromagnetic Heating with Horizontal Wells", *Proc. of the 13th World Petroleum Congress*, 557-559, John Wiley and Sons, NY.
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