

LJUBISA R. RADOVIC

PERSONAL

- Born June 16, 1951 (Belgrade, Yugoslavia); naturalized U.S. citizen; married, 2 children.
- Speak fluently English, Spanish, French and Serbo-Croatian; passive knowledge of Italian and German.

EDUCATION

Attended primary and secondary schools in Yugoslavia, Lebanon and Chile.

B.S. Chemical Engineering, University of Belgrade, Yugoslavia, 1977.

Ph.D. Fuel Science (Materials Science and Engineering), Penn State University, 1982.

PRESENT EMPLOYMENT

Assistant Professor of Fuel Science (1986-1992)

Associate Professor of Fuel Science (1992-1998)

Professor of Fuel Science (1998-1999)

Professor of Energy and Mineral Engineering (1999-present)

Address:

The Pennsylvania State University

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Professor, Department of Chemical Engineering (2006-present)

University of Concepción, Facultad de Ingeniería, Casilla 160-C, Correo 3, Concepción, Chile

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WORK EXPERIENCE

- Employer:** Boris Kidric Institute of Nuclear Sciences, Belgrade, Yugoslavia, 1977-79
Title: Junior Researcher
Experience: Cellulose pyrolysis, carbon fiber and felt production
- Employer:** The Pennsylvania State University, Fuel Science Section, 1979-82
Title: Graduate Research Assistant
Experience: Graduate studies in Fuel Science
- Employer:** University of Concepción, Department of Chemical Engineering, Concepción, Chile, 1983-84
Title: Visiting Assistant Professor
Experience: (a) Teaching: chemical reactor design, coal combustion, coal conversion
(b) Research: gasification of Chilean coals
- Employer:** The Pennsylvania State University, Department of Chemical Engineering, 1984-85
Title: Research Associate (c/o Prof. M.A. Vannice)
Experience: Methanol synthesis, catalyst deactivation, poisoning of catalysts
- Employer:** Polytechnic University (formerly Polytechnic Institute of New York), Department of Chemical Engineering, 1985-86
Title: Assistant Professor
Experience: (a) Teaching: chemical reactor design, heat and mass transfer

- (b) Research: fundamentals of coal gasification
- F. Employer: The Pennsylvania State University, Department of Materials Science and Engineering, 1986-1998

HONORS

- Fulbright Scholarship, 1979-80
- C.C. Wright Award (best graduate student, Fuel Science, PSU, 1982)
- Phi Lambda Upsilon
- Sigma Xi
- The Pergamon Press Award (for best paper published in the journal *Carbon*, 1989-1990)
- Fellow, Japan Society for the Promotion of Science, 2002
- Graffin Lecturer, American Carbon Society, 2006-2007
- The SGL Carbon Award (for “overall contributions and achievements that have significantly influenced the progress of the science and/or technology of carbon materials”), American Carbon Society, 2007
- Corresponding member, Academy of Sciences of Colombia (Academia Colombiana de Ciencias Exactas, Físicas y Naturales), 2014

RESEARCH SUPPORT

A. Past

1. Gas Research Institute. "Chemisorption, Reaction and Desorption Studies of Coal Chars in Steam, Oxygen and Carbon Dioxide."
2. Texaco Inc. "A New Approach Toward Viable Carbon-Supported Catalysts."
3. Aluminum Company of America. "Characterization and Modification of Carbon-Coated Alumina" (with A.W. Scaroni).
4. NATO Scientific Affairs Division. "Transient Kinetic Studies in Coal/Carbon Gasification" (with F. Kapteijn, University of Amsterdam, The Netherlands).
5. R.J. Reynolds Tobacco Company. "Combustion Characteristics of Carbons."
6. Gas Research Institute. "Adsorption and Transport in Coalbed Reservoirs" (with T. Ertekin, A. Grader and W. Steele).
7. Cooperative Program in Coal Research, Penn State University. "A Fundamental Study of the Kinetics of Regeneration of Coked Zeolite Catalysts" (with M.A. Vannice).
8. Monbusho International Scientific Research Program (Japan). "Studies on the Utilization of Catalytic Carbon Gasification" (with A. Tomita, Tohoku University, Japan).
9. Department of Energy (PETC). "Novel Coal Liquefaction Catalysts: Molecular Design Via Microemulsion-Based Synthesis" (with K. Osseo-Asare).
10. Air Force Office of Scientific Research (AASERT). "A New Approach Toward the Understanding of Oxidation of Carbon/Carbon Composites" (with P.A. Thrower).
11. Carbon Research Center, Penn State University. "Optimization of Surface Chemistry of Active Carbons."
12. Department of Energy (UCR). "Effects of Surface Chemistry on the Porous Structure of Coal" (with P.G. Hatcher).
13. Air Force Office of Scientific Research (URI). "Basic Solutions to Carbon/Carbon Oxidation: Science and Technology" (with M. Chung, I.R. Harrison, C.G. Pantano and P.A. Thrower).
14. Department of Energy (UCR). "Optimization of Char for NO_x Reduction" (with J. Phillips).

15. NASA Ames Research Center, "A Novel Oxidation-Resistant Thermal Protection Material."
16. Carbon Research Center (PSU). "Catalysis and Inhibition of Oxidation of Carbon/Carbon Composite Materials" (with C. G. Pantano).
17. Department of Energy. "Sequestering Carbon Dioxide in Coalbeds" (with K. A. M. Gasem and R. L. Robinson, Oklahoma State University).
18. Philip Morris Inc. "A Novel Chemical/Electrochemical Approach for Improved Vapor Adsorbents and Catalysts."
19. Air Force Office of Scientific Research (STTR). "Oxidation Protection of Carbon/Carbon Composite Materials" (with D. Baker, PowderMet, Inc.).
20. Fondecyt-Chile and MECESUP-University of Concepción. "Carbon materials for catalytic applications" (with A. Gordon and X. García).
21. Catalysis of coke gasification (BP Americas, with A. Gordon and X. García).
22. Quantum chemistry and electron spin resonance of carbon nanomaterials (Fondecyt-Chile, with K. Kaneko and H. Kanoh, Chiba University).
23. Computational chemistry of carbon materials and their oxygen-transfer reactivity (U.S.-Israel Binational Science Foundation, with J. Sofo and E. Bar-Ziv).
24. Quantum chemistry of graphene: toward a fundamental understanding of electrochemical and (electro)catalytic properties of carbon materials (2013-2015, Fondecyt-Chile, with T. Kyotani, Tohoku University, Japan).
25. Theoretical and experimental investigation of graphene surface functionalization (2016-2019, Fondecyt-Chile).

B. Current

1. Materials derived from forest biomass (CCTE-UDT, University of Concepción, Chile).

INDUSTRIAL CONSULTING EXPERIENCE

Alcoa, Allied-Signal, Banco Santander de Negocios/Elcogas (Spain), BP Americas, Calgon Carbon, Cabot, Corning, Dow Chemical, Engelhard, Eniricerche, Goodrich, FeRx, Fresenius Medical Care, Philip Morris, Procter & Gamble, R. J. Reynolds, SorbTech, Tecsol (Colombia), Texaco, W. L. Gore & Associates.

RESEARCH INTERESTS

- gas/solid reactions and development of heterogeneous catalysts and adsorbent products
- use of carbon materials in air and water pollution prevention processes
- coal and biomass gasification
- use of biomass-derived materials
- computational chemistry of carbon reactions
- surface properties of carbon materials (supports, catalysts, adsorbents, fibers, composites)
- kinetics, catalysis and inhibition of coal conversion and carbon gasification processes
- methodology of teaching energy and environmental issues to non-technical students
- methodology of teaching and learning in the times of webofknowledge.com and google.com
- energy and environmental policies

PROFESSIONAL SOCIETIES

- American Carbon Society (member of Advisory Committee, 1989-95, 2007-2010; member of Executive Committee, 1996-1999, 2010-2016; Secretary-Treasurer, 1996-1999; Editor-in-Chief, CARBON journal, 1999-2003)
- American Chemical Society (Central PA Section Chairman, 1994)
- American Institute of Chemical Engineers
- The Electrochemical Society

SELECTED PROFESSIONAL ACTIVITIES

- topical area chairman, "Reactivity and Catalysis," 18th Biennial Conference on Carbon, Worcester, MA, 1987.
- symposium co-organizer, "Fundamentals of Gasification," 197th National Meeting of the American Chemical Society, Division of Fuel Chemistry, Dallas, 1989.
- technical program chairman, 19th Biennial Conference on Carbon, University Park, PA, 1989.
- international expert on coal gasification, United Nations Development Program/University of Concepción, Concepción, Chile (1987-1991).
- international expert on coal gasification, Interamerican Development Bank/National University of Colombia, Bogotá, Colombia (1988-1991).
- working group co-chairman (with H. Marsh), ASA Concept, NATO Advanced Research Workshop on Fundamental Issues in Control of Carbon Gasification Reactivity, Cadarache, France, July 1990.
- international expert on coal gasification, Lee e Infante Ltda./Gases de Antioquia/Carbocol/Colciencias, Bogotá, Colombia (1989-1992).
- member of peer review panel "Coal Gasification: Reaction Chemistry," Fossil Energy Advanced Research Review, U.S. DOE, Pittsburgh, PA, October 1990.
- topical area chairman, "Deposition, Gasification and Reactivity," 20th Biennial Conference on Carbon, Santa Barbara, CA, 1991.
- symposium organizer, "Workshop on Carbon Active Sites," 202nd National Meeting of the American Chemical Society, Division of Fuel Chemistry, New York City, 1991.
- consultant on 330 MW Integrated Gasification/Combined Cycle (IGCC) Puertollano project (Spain), ELCOGAS/Banco Santander de Negocios, Madrid, Spain (1992).
- visiting professor, Department of Inorganic Chemistry, University of Alicante, Spain, May-July 1994.
- lecturer, Summer Course "Surfaces, Texture and Surface Activity of Solid Materials" (Superficie, textura y actividad superficial de materiales sólidos), Universidad Nacional de Educación a Distancia, Avila, Spain, July 1994.
- lecturer, "Activated Carbon in Catalysis," Short Course "Science and Technology of Activated Carbon," University of Alicante, Spain, October 1994.
- discussion leader, Gordon Research Conference "The Science of Hydrocarbon Resources," Oahu, Hawaii, November 1994.
- member of editorial board, FUEL, journal of the science and technology of Fuel and Energy, 1995-present.
- member of EPSCoR Merit Review Panel (Engineering), National Science Foundation, Arlington, VA, February 1995.
- topical area co-chairman (with R. Yang, SUNY Buffalo), "Gasification and Reactivity," 22nd Biennial Conference on Carbon, San Diego, CA, 1995.

- lecturer, week-long short course entitled “Fundamentals of Coal Combustion,” National University, Bogotá, Colombia, August 1995.
- workshop organizer (with F.S. Baker, Westvaco), “Carbon Materials for the Environment,” sponsored by the American Carbon Society, Charleston, SC, June 1996.
- symposium organizer, “Gasification Mechanisms,” 211th National Meeting of the American Chemical Society, Division of Fuel Chemistry, New Orleans, 1996.
- co-editor (with P.A. Thrower), “Chemistry and Physics of Carbon” (a series of advances), published by Marcel Dekker, New York and Basel, 1996-1997.
- editor, “Chemistry and Physics of Carbon” (a series of advances), published by Marcel Dekker, New York and Basel, 1998-present.
- member of international editorial board, Hemijska Industrija (Chemical Industry), journal of the Federation of Chemists and Technologists of Yugoslavia, 1996-present.
- technical program chairman, 23rd Biennial Conference on Carbon, University Park, PA, 1997.
- secretary-treasurer of the American Carbon Society, 1996-1999.
- member of Executive Committee of the American Carbon Society, 1996-1999.
- invited lecturer, Pacific Basin Workshop on Adsorption Science and Technology, Kisarazu, Japan, May 1997.
- invited lecturer, International Conference in Commemoration for the 45th Anniversary of Chungnam National University, Taejon, Korea, May 1997.
- plenary speaker, 5th International Activated Carbon Conference, Pittsburgh, PA, September 1997.
- invited lecturer, NEDO/MITI, Japan (c/o Y. Yamada, National Institute for Resources and Environment, Tsukuba, Japan), October 1997.
- plenary lecturer, XXI Event of the Italian Section of the Combustion Institute, Ravello (Salerno), Italy, May 1998.
- invited lecturer, 2nd Asia Pacific Conference on Sustainable Energy and Environmental Technology, Gold Coast, Australia, June 1998.
- member of Honorary Editorial Advisory Board, CARBON journal, 1998-1999, 2004-.
- expert witness, Eaton vs. Pfizer (consultant for Kirkpatrick & Lockhart LLP, Pittsburgh, PA), 1997-98.
- expert witness, Powell Duffryn Terminals *et al.* vs. Calgon Carbon Corp. *et al.* (consultant for The Vail Consulting Company, Inc., Marietta, GA, and Jones, Day, Reavis & Pogue, Atlanta, GA), 1997-98.
- visiting professor, Department of Chemical Engineering, University of Queensland, Australia, July-December 1998.
- invited lecturer, international symposium on Carbon Alloys, Tokyo, Japan, November 1998.
- invited lecturer, international post-symposium on carbon materials Kyoto/Osaka, Japan, November 1998.
- editor-in-chief, CARBON journal, 1999-2003.
- visiting professor, Department of Inorganic Chemistry, University of Granada, Spain, Summer 1999.
- invited lecturer, 1999 Gordon Research Conference on High-Temperature Corrosion (Corrosion-Dry), Colby Sawyer College, New London, NH, July 1999.
- plenary lecturer, Mediterranean Combustion Symposium, Antalya, Turkey, June 1999.
- plenary lecturer, Annual Meeting of the Spanish Carbon Group (GEC), Oviedo, Spain, November 1999.
- invited speaker, IOP Catalysis International Congress, Maastricht, The Netherlands, November 1999.

- symposium co-organizer, "Molecular Modeling of Solid Fuel Reactions," 219th National Meeting of the American Chemical Society, Division of Fuel Chemistry, San Francisco, March 2000.
- plenary lecturer, XVII Ibero-American Symposium on Catalysis, Porto, Portugal, July 2000.
- symposium co-organizer, "Symposium in memory of Frank Derbyshire," 220th National Meeting of the American Chemical Society, Division of Fuel Chemistry, Washington, DC, August 2000.
- discussion leader, Gordon Research Conference "Chemistry of Hydrocarbon Resources," Ventura, CA, January 2001.
- lecturer, 2-day short course "Physics and Chemistry of Activated Carbon Adsorbents," Philip Morris R&D Center, Richmond, VA, January 2001.
- lecturer, short course "Adsorption Using Activated Carbons: New Opportunities for Cleaning Up the Air and the Waters" (with F. Rodriguez-Reinoso), National University, Bogotá, Colombia, August 2001.
- invited speaker, Colombian Congress of Chemical Engineering, Bogotá, August 2001.
- keynote speaker, Symposium on Publishing and Writing in Engineering and Science, Clemson University, April 2002.
- visiting professor, Institut für Chemische Technik der Universität Karlsruhe, Germany, June 2002.
- symposium co-organizer, "Trends in Carbon Products," 222nd National Meeting of the American Chemical Society, Division of Fuel Chemistry, Boston, August 2002.
- keynote speaker, International Carbon Conference, Beijing, China, September 2002.
- invited speaker, U.S.-Korea Workshop on Carbon Materials, Cheju Island, Korea, September 2002.
- plenary lecturer, Japanese Adsorption Society Meeting, Matsumoto, Japan, October 2002.
- session co-organizer and discussion leader ("Carbon Materials"), Gordon Research Conference "Chemistry of Hydrocarbon Resources," Ventura, CA, January 2003.
- invited lecturer, University of Utah, Department of Chemical and Fuels Engineering Distinguished Lecturer Series, March 2003.
- invited panelist, International Workshop "Integrated Approach to Clean Energy and Environment," Yokkaichi (Mie Prefecture), Japan, May 2003.
- plenary lecturer, International Carbon Conference "Carbon 2003," Oviedo, Spain, July 2003.
- keynote speaker, European Congress of Chemical Engineering, Granada, Spain, September 2003.
- keynote speaker, 6th International Symposium on Iodine Utilization, Chiba University, Japan, October 2003.
- plenary lecturer, Second Brazilian Carbon Congress "Carbono 2004," Vitoria, Espirito Santo, Brazil, May 2004.
- international expert, MECESUP/MinEduc peer review of PhD program in engineering, Pontificia Universidad Católica, Santiago, Chile, May 2004.
- invited lecturer, 4th International Conference of the Chemical Societies of the South-East European Countries (ICOSECS 4), Belgrade, Serbia and Montenegro, July 2004.
- topical area co-chairman, "Reactivity, Catalysis, and Surface Science," International Conference on Carbon (Carbon 2004), Providence, RI, July 2004.
- visiting professor, Department of Chemical Engineering, University of Concepción, Concepción, Chile, May-August 2004.
- plenary lecturer, XXIX Iberic Adsorption Meeting, Porto, Portugal, September 2004.
- keynote lecturer, 6th International Conference on Nanotechnology in Carbon (NanoteC'04), Batz-sur-Mer, France, October 2004.

- invited lecturer, “Power Plants 2004,” Meeting of the Society of Thermal Engineers, Vrnjacka Banja, Serbia and Montenegro, November 2004.
- invited speaker, Nanocarbons 2004, Nagano, Japan, November 2004.
- plenary lecturer, Indian Carbon Conference, New Delhi, India, November 2004.
- research fellow, Japan Society for the Promotion of Science, Chiba University, November 2005.
- member of Program Committee, 2nd International Symposium on Carbon for Catalysis, St. Petersburg, Russia, July 3-8, 2006.
- member of Advisory Committee of the American Carbon Society, 2007-2010.
- international consultant, Analysis of prefeasibility for a commercial coal-to-liquids plant in Colombia, UT-CTL/Agencia Nacional de Hidrocarburos, Bogotá, Colombia, 2007.
- American Carbon Society Graffin Lectures 2007: (i) Polytechnic University, New York; (ii) Universidad Autónoma de San Luis Potosí, Mexico; (iii) Instituto Potosino de Investigación Científica y Tecnológica (IPICYT), San Luis Potosí, Mexico.
- principal investigator (biomaterials), CCTE-UDT national center of scientific and technological excellence, University of Concepción, Concepción, Chile, 2008.
- member of international advisory board and invited speaker, Carbon 2008, Nagano, Japan, July 13-18, 2008.
- invited lecturer, international Carbon 2008 pre-symposium “Future challenges for carbon-based nanoporous materials”, July 11-12, 2008, Chiba, Japan.
- invited speaker, international Carbon 2008 post-symposium “New carbon materials, intercalation compounds, and materials for batteries”, July 19, 2008, Kyoto, Japan.
- consultant, “Alternate Energy Workshop”, Monitor Company Group, Cambridge, MA, September 4-5, 2008.
- invited speaker, CarboCat III: Third International Symposium on Carbon for Catalysis, November 9-12, 2008, Berlin, Germany.
- member of international scientific committee, Carbon 2009 (The Annual World Conference on Carbon), Biarritz, France, June 14-19, 2009.
- plenary lecturer, VIII national and III international congress of science and technology of coal and alternative fuels, Bogotá, Colombia, November 2009
- member of Executive Committee of the American Carbon Society, 2010-present.
- invited speaker, First Chilean International Symposium on Biogenic Fuels, CCTE-UDT, University of Concepción, Chile, June 30, 2010.
- invited speaker, Second Symposium on Future Challenges for Carbon-Based Nanoporous Materials, Nagano, Japan, September 2010.
- invited speaker, Center for Research, Invention and Innovation (INCARBO) polygeneration workshop, Riohacha, Colombia, November 2010.
- plenary lecturer, International Carbon Conference “Carbon 2011”, Shanghai, China, July 2011.
- invited speaker, international symposium PreCarb-2012, “Surface Chemistry and Performance of Carbon Materials”, Budapest, Hungary, June 2012.
- plenary lecturer, “OzCarbon 2012”, Adelaide, Australia, July 2012.
- organizer, “P.L. Walker Memorial Symposium”, International Carbon Conference “Carbon 2013”, Rio de Janeiro, Brazil, July 2013 (with Jorge Caldeira).
- plenary lecturer, “CESEP 2013” (Carbons for Energy Storage and Environmental Protection), Müllheim an der Ruhr, Germany, September 2013.
- member of international research peer review panel, Universidad de Antioquia, Medellín, Colombia, November-December 2013.
- Corresponding Member of the Academy of Sciences of Colombia, 2014.

- member of scientific committee, “4th International Symposium on Gasification and Its Applications”, Vienna, Austria, September 2014.
- invited speaker, International Symposium on Carbon-Based Nanomaterials, Nagano, Japan, March 2015.
- invited speaker, International Symposium on Ambitious Leaders Program, Hokkaido University, Sapporo, Japan, November 2015.
- invited speaker, Meeting of Tanso 117 (Japanese Carbon Group), Tokyo, Japan, November 2015.
- chairman, International Carbon Conference “Carbon 2016”, University Park, PA, USA, July 2016 (with Mauricio Terrones).
- keynote speaker, International Carbon Conference “Carbon 2018”, Madrid, Spain, July 2018.
- keynote speaker, International Carbon Conference “Carbon 2019”, Lexington, KY, USA, July 2019.
- invited panelist, Senate of the Republic of Colombia, *Energy Security*, May 29, 2020.

MEMBER OF THESIS COMMITTEES (non-PSU)

- Diego Cazorla-Amorós, PhD Inorganic Chemistry, Universidad de Alicante, Spain, May 1991
- José Rodríguez-Mirasol, PhD Chemical Engineering, Universidad de Málaga, Spain, June 1991
- Ronald Meijer, PhD ChE, Universiteit van Amsterdam, The Netherlands, January 1992
- J. Edilberto Sánchez, PhD Chemistry, Universidad Nacional, Bogotá, Colombia, March 1997
- Fouad Haghseresht, PhD ChE, The University of Queensland, Australia, 1998
- Marco Linders, PhD ChE, Technische Universiteit Delft, The Netherlands, December 1999
- Manuel Sánchez-Polo, PhD Inorganic Chemistry, Universidad de Granada, Spain, May 2002
- Phillippe Azais, PhD Phys. Chem. Materials, Université d’Orléans, France, October 2003
- Edwin Crezee, PhD ChE, Technische Universiteit Delft, The Netherlands, November 2003
- Pilar García, PhD Chemistry, Universidad de Antioquia, Medellín, Colombia, March 2004
- Erika Arenas, PhD, Universidad Pontificia Bolivariana, Medellín, Colombia, March 2009
- Juan F. Orrego, PhD Chemistry, Universidad de Antioquia, Medellín, April 2010
- Fernando Vallejos-Burgos, PhD ChE, Universidad de Concepción, Chile, 2011 (co-advisor)
- Laura Conde, PhD ChE, Universidad Nacional, Bogotá, Colombia, October 2012
- José Miguel Bermúdez Menéndez, PhD, Universidad de Oviedo, Spain, May 2013
- María Eugenia González, PhD, Universidad de la Frontera, Chile, August 2013
- Andrea Oyarzún, PhD ChE, Universidad de Concepción, Chile, 2016 (co-advisor)
- Tomás Larraín, MS ChE, Universidad de Concepción, Chile, 2017 (co-advisor)
- Adolfo Salgado, MS ChE, Universidad de Concepción, Chile, 2017 (co-advisor)
- Camila Mora, PhD ChE, Universidad de Concepción, Chile, in progress (co-advisor)
- Oscar Pinto, PhD ChE, Universidad de Concepción, Chile (co-advisor)

PUBLICATIONS (h-index: 45)

One co-authored book, one sole-author book, five edited books, one co-edited book; several instructional web sites; more than a dozen in-depth review papers, 120+ publications in peer-reviewed journals, 200+ presentations at national and international conferences.

(updated 06/2020)