

MARK J. ROOD

Ivan Racheff Endowed Professor of Environmental Engineering
 Dept. of Civil and Environmental Engineering
 University of Illinois at Urbana-Champaign (UIUC)
 205 North Mathews Avenue
 Urbana, IL 61801 USA

217-333-6963 (voice)
 217-333-9464 (fax)
 mrood@illinois.edu (e-mail)
<http://aqes.cce.illinois.edu/>

Education and Training:

Degree	Field	Institution	Date
Ph.D.	Environmental Engineering	University of Washington, Seattle	1985
M.S.E.	Environmental Engineering	University of Washington, Seattle	1982
B.S.E.S.	Environmental Engineering	Illinois Institute of Technology	1978

Research and Professional Experience:

2012-2015	International Chair Professor, National Taipei University of Technology
2011-2012	Chinese Academy of Sciences, Visiting Professorship for Senior International Scientists
2009-present	Ministry of Education Overseas Scholar and Guest Professor, China University of Petroleum, Qingdao, China
2005 - present	Ivan Racheff Endowed Professor of Environmental Engineering, UIUC
2005 - present	Board Certified Environmental Engineer Member (BCEEM), American Academy of Environmental Engineers and Scientists (AAEES)
2004 - present	Affiliate Professor, Department of Industrial and Enterprise Systems Engineering, UIUC
1998 - present	Professor of Environmental Engineering, UIUC
1999 - 2005	Coordinator of Environmental Engineering and Science Program, UIUC
1994 - 1995	Auxiliary Faculty, Department of Atmospheric Sciences, University of Washington, Seattle, Washington
1992 - 1998	Associate Professor of Environmental Engineering, UIUC
1986 - 1992	Assistant Professor of Environmental Engineering, UIUC
1979 - 1980	Environmental Engineer, Pacific Environmental Services, Inc., Illinois

Areas of Teaching and Research:

Air quality engineering and science: gas separation, development of materials and methods to capture and recover or dispose of gases from gas streams in a sustainable manner, development of catalytic materials, ambient aerosol chemistry and physics, NH₃ emissions from agricultural emissions, optical remote sensing of ambient aerosols, and development of aerosol characterization technologies

Departmental Service:

Faculty Representative for Environmental Engineering and Sciences Laboratory Renovation (1995-1998)
 Environmental Engineering and Science Program Qualifying Exam (Coordinator, 1995-1998)
 Building, Equipment, and Non-Recurring Expenses Committee (member, 1995-1998)
 Petitions Committee for Department of Civil Engineering (member, 1995-1998)
 Chemical Hygiene Officer, Environmental Engineering and Science Program Laboratories (1995 - 1998)
 Faculty Representative to the Laboratory Manager for the Environmental Engineering and Science Program (1995-1998)
 Faculty Search Committee for three positions, Department of Civil Engineering (member, 1997-1998)
 Advisory Committee, (member ~ 1992-1994, chairperson ~1993-1994; member 1998-2001, chairperson 1999-2000; member 2008-2011)
 Awards Committee, (member, 1998-2000)

Ad hoc Promotion Committee, (member, 1998- 2001)
 Alumni Interaction Liaison, (member, 1998-present)
 Outcomes Assessment Committee, (member, 1999-2001)
 Search Committee, Laboratory Manager Environmental Engineering & Science Program, Department of
 Civil & Environmental Engineering (chairperson, 1999)
 Administrative Committee, (member, 2001-2004)
 Search Committee, joint with the Department of Atmospheric Sciences, and Environmental Council
 faculty position (member, 2001-2002)
 Environmental Engineering & Science Program, (Program Coordinator, 1999-2005)
 Ad hoc committee to complete annual interview and review for associate professor in CEE (member,
 2003)
 Promotion and Tenure Committee, (member, 2005-2008; member, 2000-2003; chairperson, 2001-2002;
 member 2016-2018)
 Ad hoc committee to develop a coursework MS degree option within EES (chairperson, 2007-present)
 Ad hoc Promotion Committee, CEE (member, 2008-2009)
 Departmental Mentor (Assistant Professor Tami Bond, Assistant Professor Kevin Finneran, Research
 Scientist/Lecturer Sotiria Koloutsou-Vakakis, Assistant Professor Vishal Verma)
 Safety Committee (Chairperson, 2009-present)
 Grievance Committee (chairperson, 2009-2011), elected
 Ad-hoc Three Year P&T Review Committee (member, 2011)
 Ad-hoc P&T Review Committee (member, 2011, 2013, 2014, Chairperson, 2015)
 Ad-hoc Faculty Scholar Nomination Committee (2012, 2013)
 EES Advancement Development/Industrial Contact Facilitator (before 2010-present)
 Awards Committee (member, 2013-2015)

College of Engineering Service:

Ad-hoc Committee to Review Revised Courses in College of Engineering, member (1999-2002)
 Promotion and Tenure Committee, (member, 2003-2004)
 Executive Committee, CoE, UIUC (member, 2007-present, presided over committee 2009-2010,
 secretary, 2008-2009)
 Promotion and Tenure Committee, CoE (chairperson, 2009-2010, member, 2008-2010)
 Administrative Committee, CoE (member, 2008-2010)
 Awards Committee, CoE (member, 2007-present)
 Transformation of Engineering Education for the 21st Century Subcommittee, Executive Committee, CoE
 (member, 2007-present)
 Cross-listing of Courses within CoE Subcommittee (Chairperson of subcommittee, 2008-present)
 CoE Bylaws Subcommittee (Chairperson of subcommittee, 2009-present)
 Ad-hoc Task Group on Gift and ICR Account Balances Committee (member, 2007-2008)
 Awards Committee, College of Engineering, UIUC (member, 2007-2011; chairperson, Harvey H. Jordan
 Committee, 2010-2011)
 Ad hoc College of Engineering Bylaws Committee (chairperson, 2007-2012)
 Academic Integrity Committee (member, 2012-present)
 Search Committee for Executive Associate Dean (member, 2013)
 Search Committee or Head of Civil and Environmental Engineering (member, 2013-2015)
 Safety Advisory Committee (member, 2013-present)

UIUC Campus Service:

Occupational Safety and Health Committee, UIUC (member, 1998-2000)
 Partnership Illinois, member of “Clean Water, Air and Food” sub-council (member, 1998-2001)
 Budget Oversight Committee, UIUC (member, 2006-2008)
 Senate, Champaign-Urbana campus, UIUC (member, 2007-2009)

Educational Policy Committee, UIUC (member, 2007-2009)
 Campus ad-hoc P&T committee to reassess tenure decision (member, 2012)
 Global Issues Forum Campus Leadership Committee (Co-Chairperson, 2015-present)
 Executive Committee of the Graduate College (member, 2015-2017), program review sub-committee
 (member, 2015-2017)
 Search Committee for Chancellor of UIUC (member, 2015-2016)
 NTU-UIUC Forum (co-chairperson, 2016-2017)

Select Peer-Reviewed Journal Publications (Total ≥ 129): [Summary of Publications](#)

- Yuen, W., MA, Q., Koloutsou-Vakakis, S., Du, K., Rood, M.J. (2017) LIDAR Equation Inversion Methods and Uncertainties in Measuring Fugitive Particulate Matter Emission Factors, *J. Applied Optics*, pp. 10, accepted pending minor revisions.
- Xu, P., Koloutsou-Vakakis, S., Rood, M.J., Luan, S. (2017) Projections of NH₃ Emissions from Manure Generated by Livestock Production in China to 2030 under Six Mitigation Scenarios, *Science of the Total Environment*, 607–608, 78–86, DOI: 10.1016/j.scitotenv.2017.06.258.
- Hu, M.-M., Emamipour, H., Johnson, D.L., Rood, M.J., Song, L., Zhang, Z. (2017) Monitor and Control of an Electrothermal Swing Adsorption System using Electrical Properties of the Adsorbent for Organic Compound Abatement, *Environmental Science & Technology*, 51(13), 7581-7589.
- Tian, Y., Liu, X., Rood, M.J., Yan, Z.-F. (2017) Study on Deposited Coke over VO_x-K₂O/γ-Al₂O₃ Catalyst in the Non-Oxidative Dehydrogenation of Isobutane, *J. of Applied Catalysis A*, 545, 1-9.
- Nelson, A.J., Koloutsou-Vakakis, S., Rood, M.J., Myles, L., Lehmann, C., Balasubramanian, S., Bernacchi, C., Joo, E., Heuer, M., Vieira-Filho, M., Lin, J. (2017) Season-Long Ammonia Flux Measurements above Fertilized Corn in Central, USA, Using Relaxed Eddy Accumulation, *Agricultural and Forest Meteorology*, 239, 202-212, DOI 10.1016/j.agrformet.2017.03.010.
- Pelay, U., Luo, L., Fan, Y., Stitou, D., Rood, M.J., Thermal Energy Storage Systems for Concentrated Solar Power Plants, *Renewable and Sustainable Energy Reviews*, 79 (2017) 82-100, ISSN 1364-0321, <http://dx.doi.org/10.1016/j.rser.2017.03.139>.
- Liu, Y., Lv, Y., Wei, L., Zhao, L., Xu, L., Yan, Z., Liu, X., Rood, M.J. (2017) Effect of Lanthanum Species on the Physicochemical Properties of La/SAPO-11 Molecular Sieve, *Journal of Catalysis*, 347, 170–184, <http://dx.doi.org/10.1016/j.jcat.2017.01.015>.
- Balasubramanian, S., Nelson, A.J., Koloutsou-Vakakis, S., Lin, J., Rood, M.J., Myles, L., Bernacchi, C. (2017) Evaluation of DeNitrification DeComposition Model for Estimating Ammonia Fluxes from Chemical Fertilizer Application, *Agricultural and Forest Meteorology*, 237-238, 123-134.
- Tian, J., Brem, B., West, M., Bond, T.C., Rood, M.J., Riemer, N. (2017) Simulating aerosol chamber experiments with the particle-resolved aerosol model PartMC, *Aerosol Science and Technology*, 856-867, <http://dx.doi.org/10.1080/02786826.2017.1311988>.
- Feng, R., Hu, X., Yan, X., Yan, Z-F, Rood, M.J (2016) A High Surface Area Mesoporous Gamma-Al₂O₃ with Tailoring Texture by Glucose Template for Ethanol Dehydration to Ethylene, *Microporous & Mesoporous Materials*, 241, 89-97, DOI: 10.1016/j.micromeso.2016.11.035.
- Liu, Y., Lv, Y., Wei, L., Zhao, L., Xu, L., Yan, Z., Liu, X., Rood, M.J. (2017) Effect of Lanthanum Species on the Physicochemical Properties of La/SAPO-11 Molecular Sieve, *Journal of Catalysis*, 347, 170–184, <http://dx.doi.org/10.1016/j.jcat.2017.01.015>.
- Yuen, W., Gu, Y., Mao, Y., Koloutsou-Vakakis, S., Rood, M.J. (2017) Performance and Uncertainty in Measuring Atmospheric Plume Opacity Using Compact and Smartphone Digital Still Cameras, *Aerosol and Air Quality Research*, 17(5), 1281-1293, doi: 10.4209/aaqr.2016.08.0369.
- Ullaha, R., Baia, P., Wua, P., Etima, U.J., Zhang, Z., Hanc, D., Subhana, F., Ullaha, S., Rood, M.J., Yan, Z., (2017) Superior Performance of Freeze-Dried Ni/ZnO-Al₂O₃ Adsorbent in the Ultra-Deep Desulfurization of High Sulfur Fuel, *Fuel Processing Technology*, 156, 2, 505–514. <http://dx.doi.org.proxy2.library.illinois.edu/10.1016/j.fuproc.2016.10.022>.
- Luan, Z., Han, Y., Liu, F., Zhao, T., Liu, C., Rood, M.J., Yang, X., He, Q. (2017) Dust Opacities inside Dust Devil Column in the Taklimakan Desert, *Atmospheric Measurement Techniques*, 10 (1), 273-

279.

- Feng, R., Yan, X., HU, X., Qiao, K., Yan, Z.-F., Rood, M.R. (2017) High Performance H₃BO₃ Modified USY and Equilibrium Catalyst with Tailored Acid Sites in Catalytic Cracking, *Microporous & Mesoporous Materials*, 243, 319-330.
- Liu, C., Zhao, T., Yang, X., Liu, F., Han, Y. Luan, Z., He, Q., Rood, M, Yuen, W. (2016) Observational Study of Formation Mechanism, Vertical Structure and Dust Emission of Dust Devils over the Taklimakan Desert, *J. Geophysical Research: Atmospheres*, 121, 7, 3608-3618.
- Johnsen, D.L., Emamipour, H., Guest, J.S, Rood, M.J. (2016) Environmental and Economic Assessment of Electrothermal Swing Adsorption of Air Emissions from Sheet-Foam Production Compared to Conventional Abatement Techniques, *Environmental Science and Technology*, DOI: 10.1021/acs.est.5b05004.
- Son, H.K., Sivakumar, S.B, Rood, M.J., Kim, B.J. (2016) Electrothermal Adsorption and Desorption of Volatile Organic Compounds on Activated Carbon Fiber Cloth, *J. Hazardous Materials*, 201, 17050, 27-34.

Select Patents, Copyrights, Invention Disclosures, Software Systems, and Book Chapters:

- Rood, M.J. and Johnsen, D. (2015) Indirect Real-Time Monitoring and Control of Electrical Resistively Heated Adsorbent System, U.S. Patent 8,940,022 B2.
- Rood, M.J., Hays, K.J., Johnsen, D., Mallouk, K. (2014) Gas Purification System for Liquefaction of Dilute Gas Components, U.S. Patent 8,636,829 B2.
- Rood, M.J., Hays, K.J., Mallouk, K., Johnsen, D. (2013) Gas Purification Device with Liquefaction of Dilute Gas Components, Patent No. US 8,500,853 B2, Aug, pp. 24.
- Rood, M.J., Hay, K.J., Kim, B.J., Emamipour, H., Hashisho, Z. (2011) Steady State Tracking Desorption System and Method, Patent No. US 8,080,095 B2, Dec., pp. 21.
- Hashmonay, R.A., Kagann, R.H., Rood, M.J., Kim, B.J., Kemme, M.R., Gillies, J. (2009) An Advanced Test Method for Measuring Fugitive Dust Emissions Using a Hybrid System of ORS and Point Monitor Techniques, *Atmospheric and Biological Environmental Monitoring*, Y.J. Kim and U. Platt (eds.), ADEMRC-7th, Springer-Verlag GmbH, pp. 73-81.
- Kim, B.J., Rood, M.J., Du, K. (2009) Digital Optical Method (DOM™) and System for Determining Opacity, U.S. Patent No. 7,495,767, February, pp. 70.
- Rood, M.J., Du, K., Kim, B.J. (2006) Digital Optical Method (DOM™) and System for Determining Opacity, Copyright, UI.
- Rood, M.J., Sullivan, P., Hay, K.J. (2002) Selective Sorption and Desorption of Gases with Electrically Heated Activated Carbon Fiber Cloth Element, April, U.S. Patent 6,364,936 B1.

Select Synergistic Activities:

- Environmental Technology and Innovation* (Co-Chief Editor, 2014-present)
- Particuology* (Editorial Board member, 2013-present)
- International Chair Professor, National Taipei University of Technology (2012-2015)
- Ministry of Education Overseas Scholar and Guest Professor, China University of Petroleum, Qingdao, China (2009-present)
- Advisory Board, Department of Civil, Architectural, and Environmental Engineering, Illinois Institute of Technology (member, 2007-present)
- American Society for Testing and Materials (ASTM), International to develop digital camera method to quantify plume opacity from stationary sources (chairperson of work group, 2006-2009; member, 2006-present)
- J. of Air & Waste Management Association* (Associate Editor, 1994–2004)
- Chinese Academy of Sciences Visiting Professor, Senior International Scientists (2011-2012)
- J. of Environmental Engineering* (Chief Editor, 2002-2004; Associate Editor, 1998-2002)
- USEPA Science Advisory Board, Environmental Engineering Comm. (member, 2003-2009)
- Air & Waste Management Association (A&WMA, vice-president (2012), member of Board of Directors

(2011-present), member of University Education Committee (1989-present), Chairperson of University of Education Committee (1994-1996), Vice-Chairperson of Scholarship Committee (2001-2003) and member (2001-present), Vice-Chairperson of the University Education Division (2003-2007), Chairperson of the University Education Division (2007-present) and member), Scholarship Trustees Committee (member, 2008-present), Scholarship Trustees Committee (member, 2008-present)

Association of Environmental Engineering Professors (AEESP, 1987-present, Treasurer and Executive Board Member, 1993-1995; developed and managed membership directory, 1990-1994, and member, 1987-present)

Select Awards:

Fellow, Association of Environmental Engineering and Science Professors (2016)

Excellence in Guiding Undergraduate Research Award, UIUC (2015)

Qingdao International Scientific and Technical Cooperation Award (2015)

Co-Editor-in-Chief, *Environmental Technology & Innovation* (2014-present)

Outstanding Contribution Award in International Cooperation, China University of Petroleum (2015)

Visiting Professor, Polytech' Nantes - Université de Nantes, La, France (2015)

Frank A. Chambers Excellence in Air Pollution Control Award, International A&WMA (2015)

Excellence in Environmental Engineering Award, "Determining Atmospheric Plume Opacity Using Low-Cost Digital Still Cameras," University Research Grand Prize, AAEES (2013)

Excellence in Environmental Engineering Award, "Organic Gas Capture for Effective Reuse or Disposal," University Research Honor Award, AAEES (2011)

Lyman A. Ripperton Environmental Educator Award, A&WMA (2010)

Fellow, A&WMA (2008-present)

Best Research & Development Team Award (2008) Innovative Measurements of Particulate Matter Emissions for Dust from Unique Military Activities, B.J. Kim, M. R. Kemme, M.J. Rood, K. Du, et al., Department of Defense, Energy Research and Development Center-Construction Engineering Research Laboratory, Champaign, IL

Outstanding Cooperator's Award, Illinois State Geological Survey (2006)

James M. Montgomery and Montgomery-Watson-Harza Thesis Awards to advisees, Association of Environmental Engineering Professors (1992, 2002)

Smolokowski Award for Best Student Platform Presentation, 23rd Biennial Conference on Carbon, The Pennsylvania State University, State College, PA. (1997)

R. A. Glenn Best Paper Award, American Chemical Society, Fuel Chem. Div. (1997)

Distinguished Service Recognition Award as Treasurer and Executive Board Member, AEESP (1993-1995)

Distinguished Advisor Award, College of Engineering (1991, 1993, 1994, 1999)

List of Teachers Ranked as Excellent by their Students, UIUC (1990, 1992, 1998 F, 1998 S, 2002, 2003, 2012)

SCOPUS H-Index: 42 for 180 documents with 4,060 citations (last accessed 7 Aug 2017)