
David R. Cocker III

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EDUCATION AND CURRENT EMPLOYMENT

University of California, Riverside

Assistant Professor, Department of Chemical and Environmental Engineering,
Jan 2001 – Present

California Institute of Technology

Doctor of Philosophy, Environmental Engineering Science (Minor: Chemical Engineering)
Master of Science, Environmental Engineering Science
Ph.D. thesis title: “Chamber Investigations of Secondary Organic Aerosol Formation.”
Advisor: John H. Seinfeld. 1996-2000

University of California, Riverside

Bachelor of Science, Environmental Engineering (Air Option)
Bachelor of Science, Chemistry 1991-1996

AWARDS

NSF Graduate Fellowship (1996-1999)
NSF CAREER development award (2005-2010)

MAJOR THESIS ADVISOR AND POSTGRADUATE SCHOLAR SPONSOR FOR:

Ph.D. students: Sandip Shah*, Chen Song, Aniket Sawant, Bethany Warren, Abhilash Nigam,
Quentin Malloy, Ajay Chaudhary

Post Doctoral Researcher: Kwangsam Na

* awarded Ph.D.

CLASSES INSTRUCTED (100 series represents upper division, 200 series represents graduate level course):

ENVE 120 – Environmental Unit Operations (three times)

ENVE 133—Air Pollution Control Engineering (once)

ENVE 135—Fate and Transport of Chemicals in the Environment (once)

CHE 190—Special Topics in Chemical Engineering (six students)

CEE 125—Analytical Methods for Chemical and Environmental Engineers (three times)

Introduced course.

CEE 202—Transport Phenomena (five times)

CEE 233—Advanced Air Pollution Control Engineering (once) **Introduced course.**

Extramural Grant Activity

Dates	Agency	Title	Amount	Role	Status
Submitted: Sep. 2001 Sep. 2001-Aug. 2002	South Coast Air Quality Management District	Mira Loma Indoor/Outdoor Air Quality Study	\$50,000	PI	Closed
Submitted: Sep. 2001 Sep. 2001-Aug. 2002	Riverside County	Mira Loma Indoor/Outdoor Air Quality Study	\$325,000	PI	Closed
Submitted: Jan. 2002 Jan. 2002-Jan. 2005	Health Effects Institute (subcontract from UCLA)	Exacerbation of Allergenic Inflammation in the Lower Respiratory Tract by Diesel Exhaust Particles Other Co-PIs: J. W. Miller	\$282,118	Co-PI	Current
Submitted: Dec. 2002 Dec. 2002-Nov. 2003	California Energy Commission (subcontract from UCR)	Measurement of Carbonyls and PM from Uncontrolled and Controlled Back-up Generators	\$35,000	PI	Closed
Submitted: Mar. 2003 Mar. 2003-Feb. 2005	National Science Foundation	Ammonia – Organic Chemistry and Secondary Organic Aerosol Yield in the Troposphere	\$174,144	PI	Current
Submitted: Mar. 2003 Mar. 2003-Aug. 2003	Health Effects Institute (Subcontract from Los Amigos Research and Education Institute)	Scanning Electrical Mobility Spectrometer as follow on to “Generation and Characterization of Diesel Exhaust for Human Exposures: Pilot Study”	\$50,000	PI	Closed
Submitted: Jun. 2003 Jun. 2003-Jun. 2004	Cal EPA/ARB	Literature Searches for Internal Combustion Engine Air Toxic Emissions and Particulate Matter Mass Measurement and Physical Characterization Other Co-PIs: J.M. Norbeck, T. Durbin	\$64,519	Co-PI	Closed
Submitted: Jul. 2003 Jul. 2003-Apr. 2007	SERDP (subcontracted from Desert Research Institute)	Emissions from Department of Defense Off-road Diesel Sources Other Co-PIs: J.W. Miller	\$2,488M overall; \$1.0M to UCR	Co-PI	Current
Submitted: Aug. 2003 Aug. 2003-Jul. 2004	SCAQMD	Reactivity and Availability Studies of VOC Species Found in Architectural Coatings and Mobile Sources Other Co-PIs: W.P.L. Carter, D. Fitz	\$200,000	Co-PI	Closed
Submitted: Jan. 2004 May 2004-May 2006	California Air Resources Board	Evaluation of the Heavy-Duty Diesel Engine Not-To-Exceed Regulation Other Co-PIs: J.W. Miller	\$400,000	Co-PI	Current
Submitted: May 2004 N/A-N/A	Veteran Affairs, Loma Linda	Preventing Jet Fuel and Noise Induced Hearing Loss <i>Subcontract to VA, Loma Linda. Proposal funded. Awaiting contract office.</i>	\$42,300	PI	Pending
Submitted: Jun. 2004 Jul. 2004-Dec. 2004	Detroit Diesel Corporation	Tractor In-Cabin Air Quality Study	\$110,175	PI	Closed

Submitted: Jul. 2004 Jul. 2005-Jun. 2010	National Science Foundation (CAREER)	Investigations of Secondary Organic Aerosol Processes	\$400,001	PI	Current
Submitted: Aug. 2004 Jul. 2005-Jun. 2006	Environmental Protection Agency	Utilization of a Next-Generation Environmental Chamber Facility for Chemical Mechanism and VOC Reactivity Evaluation Other Co-PIs: W.P.L. Carter <i>Funding appropriated pending contract</i>	\$175,000	Co-PI	Pending
Submitted: Sep. 2004 N/A-N/A	California Air Resources Board	Development of In-field Diesel PM Compliance Method for Stationary and Portable CI Engines Other Co-PIs: J.W. Miller, W.A. Welch <i>Approved by California Air Resources Board--contract pending</i>	\$300,000	Co-PI	Pending
Submitted: Sep. 2004 Aug. 2005-Jun. 2006	California Air Resources Board	The Development of Exhaust Speciation Profiles for Commercial Jet Engines Other Co-PIs: J.W. Miller <i>Overall study funding in excess of 1 million dollars for study.</i>	\$270,000 (\$70,000 sub to UCR)	Co-PI	Current
Submitted: Apr. 2005 Jul. 2005-Jun. 2006	UC Riverside Academic Senate	Faculty Fellowship	\$2,200	PI	Current
Submitted: Jun. 2005 Jul. 2005-Jun. 2006	National Science Foundation	Research experience undergraduate (REU supplement to NSF CAREER award)	\$12,500	PI	Current
Submitted: Aug. 2005 N/A-N/A	California Air Resources Board	Evaluation of the New European Methodology for Determination of Particle Number Emissions and its Potential in California for In-use Screening Other Co-PIs: T. Durbin, J.W. Miller	\$259,286	Co-PI	Pending

Gift Summary

Dates	Agency	Title	Amount	Status
Aug. 2001-Feb. 2002	Chevron (through California Air Resources Board)	Gift	\$150,000	Closed
Jan. 2003-Jun. 2003	Energy Research Institute	Gift	\$23,000	Closed
Apr. 2005-Jun. 2006	Toyota (through California Air Resources Board)	Gift	\$200,000	Current

Technical Publications

Journal Articles (*-denotes corresponding author)

1. R.J. Griffin, **D.R. Cocker**, R.C. Flagan, J.H. Seinfeld*, "Organic Aerosol Formation from the Oxidation of Biogenic Hydrocarbons," *Journal of Geophysical Research*, 104, 3555-3567, 1999.
2. J.Yu, R.J. Griffin, **D.R. Cocker**, R.C. Flagan, J.H. Seinfeld*, P. Blanchard, "Observation of Gaseous and Particulate Products of Monoterpene Oxidation in Forest Atmospheres," *Geophysical Research Letters*, 26, 1145-1148, 1999.
3. R.J. Griffin, **D.R. Cocker**, D. Daddub, J.H. Seinfeld*, "Estimate of Global Atmospheric Organic Aerosol from Oxidation of Biogenic Hydrocarbons," *Geophysical Research Letters*, 26, 2721-2724, 1999.
4. J. Yu, **D.R. Cocker**, R.J. Griffin, R.C. Flagan, J.H. Seinfeld*, "Gas-phase Ozone Oxidation of Monoterpenes: Gaseous and Particulate Products," *Journal of Atmospheric Chemistry*, 34, 207-258, 1999.
5. R.J. Griffin, **D.R. Cocker**, J.H. Seinfeld*, "Incremental Aerosol Reactivity: Application to Aromatic and Biogenic Hydrocarbons," *Environmental Science and Technology*, 33, 2403-2408, 1999.
6. M. Kalberer, J. Yu, **D.R. Cocker**, R.C. Flagan, J.H. Seinfeld*, "Aerosol Formation in the Cyclohexene/Ozone System," *Environmental Science and Technology*, 34, 4894-4901, 2000.
7. **D.R. Cocker**, R.C. Flagan, J.H. Seinfeld*, "State-of-the-art Chamber Facility for Studying Atmospheric Aerosol Chemistry," *Environmental Science and Technology*, 35, 2594-2601, 2001.
8. **D.R. Cocker**, N. Whitlock, R.C. Flagan, J.H. Seinfeld*, "Hygroscopic Properties of Pasadena, California Aerosol," *Aerosol Science and Technology*, 35, 637-647, 2001.
9. **D.R. Cocker**, S.L. Clegg, R.C. Flagan, J.H. Seinfeld*, "The Effect of Water on Gas-Particle Partitioning of Secondary Organic Aerosol: I. α -Pinene/Ozone System," *Atmospheric Environment*, 35, 6049-6072, 2001.
10. **D.R. Cocker**, B.T. Mader, M. Kalberer, R.C. Flagan, J.H. Seinfeld*, "The Effect of Water on Gas-Particle Partitioning of Secondary Organic Aerosol: II. *m*-Xylene and 1,3,5-Trimethylbenzene Photooxidation Systems," *Atmospheric Environment*, 35, 6073-6085, 2001.
11. J.L. Jimenez, R. Bahreini, **D.R. Cocker**, H. Zhuang, V. Varutbangkul, R.C. Flagan, J.H. Seinfeld*, C.D. O'Dowd, T. Hoffmann, "New Particle Formation from Photooxidation of Diiodomethane (CH_2I_2)," *Journal of Geophysical Research*, 108, #4318, 25, 2003.
12. D. Sharma, A.A. Sawant, R. Uma, **D.R. Cocker***, "Preliminary Chemical Characterization of Particle-Phase Organic Compounds in New Delhi, India," *Atmospheric Environment*, 37, 4317-4323, 2003.

13. K. Na, A.A. Sawant, C. Song, **D.R. Cocker***, "Primary and Secondary Carbonaceous Species in the Atmosphere of Western Riverside County, California," *Atmospheric Environment*, 38, 9, 1345-1355, 2004.

14. **D.R. Cocker***, S.D. Shah, K. Johnson, J.W. Miller, J.M. Norbeck, "Development and Application of a Mobile Laboratory for Measuring Emissions From Diesel Engines I. Regulated Gaseous Emissions," *Environmental Science and Technology*, 38, 7, 2182-2189, 2004.

15. **D.R. Cocker***, S.D. Shah, K. Johnson, X. Zhu, J.W. Miller, J.M. Norbeck, "Development and Application of a Mobile Laboratory for Measuring Emissions From Diesel Engines II. Sampling for Toxics and Particulate Matter," *Environmental Science and Technology*, 38, 6809-6816, 2004.

16. K. Na, A.A. Sawant, **D.R. Cocker***, "Trace Elements in Fine Particulate Matter within a Community in Western Riverside County, CA: Focus on Residential Sites and a Local High School," *Atmospheric Environment*, 38, 18, 2867-2877, 2004.

17. S.D. Shah, **D.R. Cocker***, J.W. Miller, J.M. Norbeck, "Emission Rates of Particulate Matter and Elemental and Organic Carbon from In-Use Diesel Engines," *Environmental Science and Technology*, 38, 9, 2544-2550, 2004.

18. D.R. Collins*, **D.R. Cocker**, R.C. Flagan, J.H. Seinfeld, "The Scanning DMA Transfer Function," *Aerosol Science and Technology*, 38, 8, 833-850, 2004.

19. A.A. Sawant, K. Na, X. Zhu, K.M. Cocker, S. Butt, C. Song and **D.R. Cocker***, "Characterization of PM_{2.5} and Selected Gas-phase Compounds at Multiple Indoor and Outdoor Sites in Mira Loma, California," *Atmospheric Environment*, 38, 37, 6269-6278, 2004.

20. A.A. Sawant, K. Na, X. Zhu, **D.R. Cocker***, "Chemical Characterization of Outdoor PM_{2.5} and Gas-Phase Compounds in Mira Loma, California," *Atmospheric Environment*, 38, 33, 5517-5528, 2004.

21. C. Song, K. Na, **D.R. Cocker***, "Impact of the Hydrocarbon to NO_x Ratio (HC:NO_x) on Secondary Organic Aerosol Formation," *Environmental Science and Technology*, 39, 3143-3149, 2005.

22. S.D. Shah, T. Ogunyoku, J.W. Miller, **D.R. Cocker***, "On-Road Emission Rates of PAH and n-Alkane Compounds From Heavy-Duty Diesel Vehicles," *Environmental Science and Technology*, 39, 5276-5284, 2005.

23. K. Na, **D.R. Cocker***, "Organic and Elemental Carbon Concentrations in Fine Particulate Matter in Residences, Schoolrooms, and Outdoor Air in Mira Loma, California," *Atmospheric Environment*, 39, 3325-3333, 2005.

24. S.D. Shah, **D.R. Cocker***, "A Fast Scanning Mobility Particle Spectrometer for Monitoring Particle Size Distributions," *Aerosol Science and Technology*, 39, 519-526, 2005.

Journal Articles (In Press)

25. W.P.L. Carter*, **D.R. Cocker**, D. Fitz, I. Malkina, K. Bumiller, C. Sauer, J. Pisano, C. Bufalino, C. Song, "A New Environmental Chamber for Evaluation of Gas-Phase Chemical Mechanisms and Secondary Aerosol Formation," July, *Atmospheric Environment*, 40, 2005.

Journal Articles (Submitted)

26. S.D. Shah, **D.R. Cocker***, K.C. Johnson, J.W. Miller, J. Lee, B. Soriano, "Emissions of Regulated Pollutants from In-Use Diesel Back-Up generators," November, *Environmental Science and Technology*, 24 pages, 2004.

27. S.D. Shah, K. Johnson, J.W. Miller, **D.R. Cocker***, "Emission Rates of Regulated Pollutants from On-Road Heavy-Duty Diesel Vehicles," December, *Atmospheric Environment*, 23 MS pages, 2004.

28. K. Na, C. Song, **D.R. Cocker***, "Formation of Secondary Organic Aerosol from the Reaction of Styrene with Ozone in the Presence and Absence of Ammonia and Water," May, *Atmospheric Environment*, 29 pages, 2005.

29. A.A. Sawant, J.W. Miller, D. Diaz-Sanchez, H. Gong, W. Linn, K. Clark, T. Taliaferro, **D.R. Cocker***, "Generation of Diesel Exhaust for Human Exposure," July, *Aerosol Science and Technology*, 27 pages, 2005.

Journal Articles (In Preparation)

30. A.A. Sawant, A. Nigam, J.W. Miller, **D.R. Cocker***, "Emissions From In-use Diesel-Electric Switching Locomotives. 1. Regulated Emissions," *Environmental Science and Technology to be submitted by 9/8/05*.

31. A.A. Sawant, A. Nigam, J.W. Miller, **D.R. Cocker***, "Emissions From In-use Diesel-Electric Switching Locomotives. 2. Non-Regulated Emissions," *Environmental Science and Technology to be submitted by 9/8/05*.

32. C. Song, K. Na, **D.R. Cocker***, "The Effect of Propene on Secondary Organic Aerosol Formation from m-Xylene/NO_x System," to be submitted to *Environmental Science and Technology* by 10/1/05

33. K. Na, C. Song, C. Switzer, **D.R. Cocker***, "Effect of Ammonia on Secondary Organic Aerosol Formation from α -Pinene Ozonolysis in Dry and Humid Conditions," *Atmospheric Environment* by 10/1/05.

34. S.D. Shah, **D.R. Cocker***, K.C. Johnson, J.M. Leef, B.L. Soriano, J.W. Miller, "Reduction of Particulate Matter Emissions from Diesel Back-Up Generators Equipped with Four Different Exhaust Aftertreatment Devices," *Atmospheric Environment* by 10/15/05.

Symposia/Conference Proceedings

1. J.W. Miller, **D.R. Cocker**, K.C. Johnson, C.S. Park, W.A. Welch, J.M. Norbeck, "Use of a Mobile Laboratory to Measure HDD Real World Emissions from a Number of Standard and Non-Standard Cycles," *12th CRC On-Road Vehicle Emissions Workshop*, San Diego, CA, April 2002, 20 pages, 2002.
2. S.D. Shah, **D.R. Cocker**, J.M. Norbeck, T.D. Durbin, J.W. Miller, "Development of Test Cycles for Off-Road Heavy Duty Diesel Vehicles Based on Application," *12th CRC On-Road Vehicle Emissions Workshop*, San Diego, CA, April 2002, 16 pages, 2002 (**Non-Refereed**).
3. H. Lin, **D.R. Cocker**, J.M. Norbeck, "An Assessment of the Contribution of Mobile Sources on Visibility Degradation in the Los Angeles Basin: Past, Present, and Future," *A&WMA's 95th Annual Conference & Exhibition*, Paper #42311, Baltimore, MD, June 2002, 12 pages, 2002.
4. J.W. Miller, **D.R. Cocker**, K.C. Johnson, G. Scora, S.D. Shah, T. Younglove, "Measuring "Real-World" Emissions with the Complexities of Changes in Engine Family, Fuel, Cycle, and Engine Mapping," *13th CRC On-Road Vehicle Emissions Workshop*, San Diego, CA, April 2003, 22 pages, 2003 (**Non-Refereed**).
5. S.D. Shah, **D.R. Cocker**, K.M. Cocker, J.W. Miller, J.M. Norbeck, "On-Road Measurement of PM_{2.5} Mass, Elemental Carbon and Organic Carbon Emission Rates for Heavy-Duty Diesel Trucks," *13th CRC On-Road Vehicle Emissions Workshop*, San Diego, CA, April 2003, 14 pages, 2003 (**Non-Refereed**).
6. X. Zhu, **D.R. Cocker**, K. Johnson, J.W. Miller, J.M. Norbeck, "On-Road Speciated Emission Rates of Volatile Organic Compounds (C1-C12) from Heavy Heavy-Duty Diesel Trucks," *AWMA 96th Annual Conference*, Paper No. 69309, San Diego, CA, June 2003, 10 pages, 2003 (**Non-Refereed**).
7. S.D. Shah, **D.R. Cocker**, J.W. Miller, J.M. Norbeck, "Fast-scan SMPS for Size Distributions of Particulate Matter Emitted from Diesel Vehicles," *14th CRC On-Road Vehicle Emissions Workshop*, San Diego, CA, March 2004, 21 pages, 2004 (**Non-Refereed**).
8. S.D. Shah, **D.R. Cocker**, T. Ogunyoku, J.W. Miller, J.M. Norbeck, "Speciation of particulate and semi-volatile emissions from on-road diesel vehicle operation," *14th CRC On-Road Vehicle Emissions Workshop*, San Diego, CA, March 2004, 20 pages, 2004 (**Non-Refereed**).
9. A.A. Sawant, M. Barth, **D.R. Cocker**, "Influence of Traffic Density on Heavy Heavy-Duty Diesel Vehicle Emissions," *CRC 15th On-Road Vehicle Emissions Workshop*, San Diego, CA, April 2005, 22, 2005 (**Non-Refereed**).
10. A.A. Sawant, A. Nigam, J.W. Miller, **D.R. Cocker**, "Detailed Measurements of Gas- and Particle-Phase Emissions from In-use Diesel-Electric Locomotives," *CRC 15th On-Road Vehicle Emissions Workshop*, San Diego, CA, April 2005, 15, 2005 (**Non-Refereed**).

Other Publications

Abstracts (*Presentations with published Abstracts*)

1. **D.R. Cocker**, R.J. Griffin, N. Whitlock, R.C. Flagan, J.H. Seinfeld, "Secondary Organic Aerosol Formation from Biogenic Precursors," *The US/German Ozone/Fine Particle Science and Environmental Chamber Workshop*, Riverside, CA, October 1999.
2. **D.R. Cocker**, R.C. Flagan, J.H. Seinfeld, "The Effect of Relative Humidity on Secondary Organic Aerosol Formation," *American Association for Aerosol Research*, St. Louis, MO, November 2000.
3. R.J. Griffin, **D.R. Cocker**, N. Whitlock, R.C. Flagan, J.H. Seinfeld, "Secondary Organic Aerosol Formation from Biogenic Precursors," *American Association for Aerosol Research*, Cincinnati, OH, June, 1998.
4. J.H. Seinfeld, **D.R. Cocker**, R.J. Griffin, J.Z. Yu, B. Hemming, R.C. Flagan, "Aerosol Formation from Atmospheric Oxidation of Hydrocarbons," *Abstracts of Papers of the American Chemical Society*, Anaheim, CA, 217:733, March, 1999.
5. **D.R. Cocker**, N. Whitlock, D.R. Collins, J. Wang, R.C. Flagan, J.H. Seinfeld, "Instrumentation for State-of-the-art Aerosol Measurements in a Smog Chamber," *The US/German Ozone/Fine Particle Science and Environmental Chamber Workshop*, Riverside, CA, October, 1999.
6. D.R. Collins, **D.R. Cocker**, R.C. Flagan, J.H. Seinfeld, "Fast Scanning Electrical Mobility Analyzer," *American Association for Aerosol Research*, St. Louis, MO, November, 2000.
7. **D.R. Cocker**, R.C. Flagan, J.H. Seinfeld, "Role of Water in Gas-Particle Partitioning of Secondary Organic Aerosol," *American Association for Aerosol Research*, St. Louis, MO, November, 2000.
8. J.L. Jimenez, R. Bahreini, **D.R. Cocker**, H. Zhuang, T. Hoffmann, C. O'Dowd, R.C. Flagan, J.H. Seinfeld, "Aerosol Formation from the Photolysis of CH₂I₂ in the Presence of Ozone," *American Association for Aerosol Research*, Portland, OR, October, 2001.
9. S. Butt, **D.R. Cocker**, "Mira Loma Project: Air Sampling Study," *Southern California Conference on Undergraduate Research*, Los Angeles, CA, November, 2001.
10. S. Butt, **D.R. Cocker**, "Mira Loma Project: Air Sampling Study," *Undergraduate Research Conference*, Northridge, CA, April, 2002.
11. G. Aniol, **D.R. Cocker**, "Analysis of Ambient Levels of Elemental and Organic Carbon in Mira Loma," *Undergraduate Research Conference*, Northridge, CA, April, 2002.

12. J.W. Miller, **D.R. Cocker**, K.C. Johnson, S.D. Shah, J.M. Norbeck, "Measuring "Real World" Heavy-Duty Diesel Emissions with a Mobile Lab," *Diesel Engine Emission Reduction (DEER) Conference*, San Diego, CA, August, 2002.

13. J.L. Jimenez, R. Bahreini, **D.R. Cocker**, H. Zhuang, V. Varutbangkul, R.C. Flagan, J.H. Seinfeld, C. O'Dowd, T. Hoffman, L. Pirjola, M. Kulmala, "New Particle Formation From Photooxidation of Diiodomethane (CH₂I₂): Smog Chamber Experiments, Kinetic Modeling, and Impact on Marine Aerosol," *American Association for Aerosol Research*, Charlotte, NC, October, 2002.

14. K. Na, A.A. Sawant, G. Aniol, K.M. Cocker, **D.R. Cocker**, "Characteristics of Elemental Carbon and Organic Carbon Concentrations in Indoor and Outdoor Air in Mira Loma, CA," *American Association for Aerosol Research*, Charlotte, NC, October, 2002.

15. S. Butt, **D.R. Cocker**, "Mira Loma Air Quality Study: Comparison of the Impact of Local and Regional Sources on Indoor/Outdoor Air Quality," *Southern California Conference on Undergraduate Research*, Pasadena, CA, November, 2002.

16. J.L. Jimenez, R. Bahreini, **D.R. Cocker**, H. Zhuang, V. Varutbangkul, R.C. Flagan, J.H. Seinfeld, C. O'Dowd, T. Hoffman, L. Pirjola, M. Kulmala, "New Particle Formation From Photooxidation of Diiodomethane (CH₂I₂): Smog Chamber Experiments, Kinetic Modeling, and Impact on Marine Aerosol," *American Geophysical Union Meeting*, San Francisco, CA, December, 2002.

17. J.W. Miller, J. Watson, H. Moosmüller, H. Kuhns, **D.R. Cocker**, G. Croll, "New Approaches for Determining the Emission Factors of Off-Road Diesel Engines," *Partners in Environmental Technology Technical Symposium and Workshop*, Washington, D.C., December, 2002.

18. J.W. Miller, **D.R. Cocker**, J. Watson, H. Kuhns, H. Moosmüller, P. Barber, "New Approaches for Determining the Emission Factors from Off-road Diesel Engines," *Strategic Environmental Research and Development Program (SERDP) Symposia*, Washington, D.C., December, 2002.

19. S.D. Shah, **D.R. Cocker**, J.W. Miller, K.C. Johnson, J.M. Norbeck, "Emission Rates for PM Mass, EC and OC From In-use Heavy-Duty Diesel Engines," *Symposium on Particulate Matter. MIT Laboratory for Energy and Environment (LFEE), Northeast States Clean Air Foundation, and MIT Integrated Program on Urban, Regional, and Global Air Pollution.*, Boston, MA, August, 2003.

20. S.D. Shah, **D.R. Cocker**, K.C. Johnson, J.W. Miller, J.M. Norbeck, "An Evaluation of Exhaust Aftertreatment Control Technologies for Diesel Particulate Matter from Back-up Utility Generators (BUGs): Focus on Organic/Elemental Carbon," *American Association for Aerosol Research*, Anaheim, CA, October, 2003.

21. **D.R. Cocker**, S.D. Shah, K. Johnson, J.W. Miller, J.M. Norbeck, "Characterization of On-road Gaseous and PM Emissions from Heavy Duty Diesel Vehicles by Direct Exhaust Hookup," *American Association for Aerosol Research*, Anaheim, CA, October, 2003.

22. T. Ogunyoku, S.D. Shah, **D.R. Cocker**, "What's on That Filter? Solvents and Diesel Particulate Matter," *Southern California Conference on Undergraduate Research*, Irvine, CA, November, 2003.

23. M. Torres, **D.R. Cocker**, "Cross-Lab Comparison of Gaseous Emissions from a Low Emission Vehicle (LEV)," *Southern California Conference on Undergraduate Research*, Irvine, CA, November, 2003.

24. C. Switzer, **D.R. Cocker**, "Effect of Ammonia on the Formation of Secondary Organic Aerosol in the Atmosphere," *Southern California Conference on Undergraduate Research*, Irvine, CA, November, 2003.

25. J. Wang, **D.R. Cocker**, "Investigation of Size Distribution of Secondary Organic Aerosol Using a Tandem Differential Mobility Analyzer," *Southern California Conference on Undergraduate Research*, Irvine, CA, November, 2003.

26. J.W. Miller, J. Watson, H. Moosmüller, H. Kuhns, **D.R. Cocker**, G. Croll, "Off-Road Diesel Engines and Emissions of Regulated and Non-Regulated Pollutants," *Partners in Environmental Technology Technical Symposium and Workshop*, Washington, D.C., December, 2003.

27. J.W. Miller, **D.R. Cocker**, K.C. Johnson, J. Lee, M. Mueller, S.D. Shah, B. Soriano, W.A. Welch, "The California Demonstration Program for Control of PM From Diesel Backup Generators (BUGS)," *U.S. Department of Energy, 10th Diesel Engine Emissions Reduction Conference*, Coronado, CA, August, 2004.

28. S.D. Shah, R.C. Flagan, **D.R. Cocker**, "A Fast Scan SMPS for Transient Size Distributions of Particulate Matter Emitted From Diesel Vehicles," *American Association for Aerosol Research*, Atlanta, GA, October, 2004.

29. K. Na, C. Song, **D.R. Cocker**, "Formation of secondary organic aerosol from the reaction of styrene with ozone in the presence and absence of ammonia and water," *American Association for Aerosol Research*, Atlanta, GA, October, 2004.

30. S.D. Shah, T. Ogunyoku, **D.R. Cocker**, "Particulate and Speciated Semi-Volatile Organic Compound (SVOC) Emissions From On-Road Diesel Vehicle Operation," *American Association for Aerosol Research*, Atlanta, GA, October 2004.

31. **D.R. Cocker**, A.A. Sawant, T. Ogunyoku, J.W. Miller, N. Helgeson, "Measurements of Particulate Matter and Volatile Organic Compounds from Aircraft Exhaust," *Aircraft Particle Emissions Experiment (APEX) Workshop*, Cleveland, OH, November, 2004.

Abstracts (In Press)

32. A.A. Sawant, A. Nigam, T. Durbin, J.W. Miller, **D.R. Cocker**, "Relative Emissions Impacts of In-use and Experimental Diesel Fuels," *American Association for Aerosol Research*, Austin, TX, October, 2005.

33. D.R. Cocker, A.A. Sawant, J.W. Miller, T. Taliaferro, D. Diaz-Sanchez, H. Gong, W. Linn, K. Clark, "Generation of Diesel Exhaust for Human Exposure," *American Association for Aerosol Research*, Austin, TX, October, 2005.

34. D.R. Cocker, A.A. Sawant, J.W. Miller, "Detailed Chemical Speciation of Aircraft Exhaust," *American Association for Aerosol Research*, Austin, TX, October, 2005.

35. A.A. Sawant, **D.R. Cocker**, "Real-World and Real-Time PM Emissions From Heavy-Duty Diesel Vehicles," *American Association for Aerosol Research*, Austin, TX, October, 2005.

36. K. Na, C. Song, **D.R. Cocker**, "Effect of Ammonia on Secondary Organic Aerosol Formation From α - and β -Pinene Ozonolysis in the Presence and Absence of Water Vapor," *American Association for Aerosol Research*, Austin, TX, October, 2005.

37. C. Song, B.A. Warren, K. Na, **D.R. Cocker**, "Impact of Propene on Secondary Organic Aerosol Formation From m-Xylene," *American Association for Aerosol Research*, Austin, TX, October, 2005.

Posters/Tutorials and Other Miscellaneous

1. D.R. Cocker, R.C. Flagan, J.H. Seinfeld, "Relative Humidity and Temperature Effects on Secondary Organic Aerosols," *American Association for Aerosol Research*, Tacoma, WA, October, 1999.

2. A.A. Sawant, K. Na, K.M. Cocker, C. Song, S. Butt, **D.R. Cocker**, "Mira Loma Air Quality Study: Impact of Local and Regional Sources," *American Association for Aerosol Research*, Charlotte, NC, October, 2002.

3. J.W. Miller, **D.R. Cocker**, J. Watson, H. Kuhns, H. Moosmüller, P. Barber, "New Approaches for Determining the Emission Factors from Off-road Diesel Engines," *SERDP Symposia*, Washington, D.C., December, 2002.

4. S.D. Shah, **D.R. Cocker**, J.M. Norbeck, J.W. Miller, "On-Road Measurements of Elemental and Organic Carbon Emissions from Heavy-Duty Diesel Vehicles," *International Workshop for the Development of Research Strategies for the Sampling and Analysis of Organic and Elemental Carbon Fractions in Atmospheric Aerosols*, Durango, CO, March, 2003.

5. X. Zhu, **D.R. Cocker**, K.C. Johnson, J.W. Miller, J.M. Norbeck, "An Estimate of the Emissions of Gas-Phase Toxic Compounds from Heavy-Duty Diesel Powered Vehicles," *CRC Conference on On-Road Emissions Workshop*, San Diego, CA, April, 2003.

6. J.G. Watson, J.W. Miller, H. Moosmüller, H.D. Kuhns, P. Barber, P. Arnott, J.C. Chow, B. Zielinska, **D.R. Cocker**, "Gas and Particle Emission Rates and Source Profiles from Non-road Military Diesel Engines," *American Association for Aerosol Research*, Pittsburgh, PA, April, 2003.

7. X. Zhu, K.C. Johnson, **D.R. Cocker**, J.W. Miller, J.M. Norbeck, "An Estimate of the Emissions of Gas-Phase Toxic Compounds from Heavy-Duty Diesel Powered Vehicles," *12th International Emission Inventory Conference*, San Diego, CA, April, 2003.

8. H. Gong, **D.R. Cocker**, J.W. Miller, D. Diaz-Sanchez, "Exacerbation of Allergic Inflammation in the Lower Respiratory Tract by Diesel Exhaust Particles (DEP): Facility Development," *The Health Effects Institute Annual Conference*, Boulder, CO, May, 2003.

9. W.P.L. Carter, C.G. Sauer, D. Fitz, K. Bumiller, C. Bufalino, I. Malkina, J.T. Pisano, M.R. Smith, **D.R. Cocker**, "A New Chamber Facility for Atmospheric Chemical Mechanism Evaluation," *Gordon Conference*, Big Sky, Montana, September, 2003.

10. **D.R. Cocker**, S.D. Shah, K.C. Johnson, J.W. Miller, J.M. Norbeck, "Design and Verification of a Direct Exhaust Hookup Mobile Emissions Laboratory for Fine Particle Measurement," *American Association for Aerosol Research*, Anaheim, CA, October, 2003.

11. **D.R. Cocker**, D. Fitz, W.P.L. Carter, "Design and Measurement Capabilities of a Next-Generation Indoor Environmental Chamber Facility for the Study of Secondary Organic Aerosol Formation," *American Association for Aerosol Research*, Anaheim, CA, October, 2003.

12. **D.R. Cocker**, A.A. Sawant, D.N. Sharma, "Two-stroke Vehicular Emissions and Air Quality in New Delhi, India: A Particularly Interesting Pilot Study," *American Association for Aerosol Research*, Anaheim, CA, October, 2003.

13. K. Na, C. Song, A.A. Sawant, K.M. Cocker, **D.R. Cocker**, "Estimation of Secondary Organic Aerosol at a Semi-Urban Site in the South Coast Air Basin," *American Association for Aerosol Research*, Anaheim, CA, October, 2003.

14. C. Song, **D.R. Cocker**, K. Na, "Characterization of Secondary Organic Aerosol Formation at Ultra-Low NO_x and Hydrocarbon Loadings in a New Environmental Chamber Facility," *American Association for Aerosol Research*, Anaheim, CA, October, 2003.

15. A.A. Sawant, K. Na, C. Song, X. Zhu, K.M. Cocker, **D.R. Cocker**, "PM_{2.5} in a Semi-Urban Environment: Indoor/Outdoor Relationships," *American Association for Aerosol Research*, Anaheim, CA, October, 2003.

16. S.D. Shah, **D.R. Cocker**, K. Johnson, J.W. Miller, J.M. Norbeck, "Emissions of PM from Diesel Back-Up Generators with After-Treatment: Focus on Elemental and Organic Carbon," *14th CRC On-Road Vehicle Emissions Workshop*, San Diego, CA, March, 2004.

17. X. Zhu, T. Durbin, **D.R. Cocker**, J.W. Miller, J.M. Norbeck, "An Estimate of Mobile Source Emission Inventory for Gas-Phase Air Borne Toxics for the L.A. Basin: Past, Present, and Future," *14th CRC On-Road Vehicle Emissions Workshop*, San Diego, CA, March, 2004.

18. J.W. Miller, **D.R. Cocker**, S.D. Shah, K.C. Johnson, "In-Use Testing of Heavy-Duty Diesel Engines," *South Coast Air Quality Management District (SCAQMD) Mobile Source Committee Hearing*, Diamond Bar, CA, March, 2004.

19. H. Gong, **D.R. Cocker**, J.W. Miller, D. Diaz-Sanchez, "Exacerbation of Allergic Inflammation in the Lower Respiratory Tract by Diesel Exhaust Particles (DEP)," *Health Effects Institute Annual Conference*, Boston, MA, May, 2004.

20. C. Song, K. Na, **D.R. Cocker**, "Impact of Hydrocarbon to NO_x ratio (HC:NO_x) on Secondary Organic Aerosol Formation," *American Association for Aerosol Research*, Atlanta, GA, October, 2004.

21. B.A. Warren, C. Song, **D.R. Cocker**, "Influence of Irradiation Source on SOA Formation Potential," *American Association for Aerosol Research*, Atlanta, GA, October, 2004.

22. A.A. Sawant, **D.R. Cocker**, "Influence of Traffic Density on Heavy-Duty Diesel Vehicle Emissions," *American Association for Aerosol Research*, Atlanta, GA, October, 2004.

23. A.A. Sawant, S.D. Shah, **D.R. Cocker**, "Investigations of In-use Heavy-duty Diesel Vehicle Emissions: Effect of Fuel Type and Control Technology," *American Association for Aerosol Research*, Atlanta, GA, October, 2004.

25. A.A. Sawant, A. Nigam, **D.R. Cocker**, "Detailed Gas- and Particle-Phase Measurements of Emissions from in-use Diesel-electric Locomotives," *American Association for Aerosol Research*, Atlanta, GA, October, 2004.

26. S.D. Shah, **D.R. Cocker**, "Emission Rates of Particulate Matter, Elemental and Organic Carbon from In-use Diesel Engines," *American Association for Aerosol Research*, Atlanta, GA, October, 2004.

27. **D.R. Cocker**, A.A. Sawant, T. Ogunyoku, J.W. Miller, "Detailed Chemical Speciation of Aircraft Exhaust," *CRC 15th On-Road Vehicle Emissions Workshop*, San Diego, CA, April, 2005.

28. **D.R. Cocker**, S.D. Shah, J.W. Miller, "Regulated Emissions from On-Road Heavy-Duty Diesel Vehicles," *CRC 15th On-Road Vehicle Emissions Workshop*, San Diego, CA, April, 2005.

Posters/Tutorials and Other Miscellaneous (In Press)

29. **D.R. Cocker**, A.A. Sawant, A. Nigam, S.D. Shah, A.K. Chaudhary, W.A. Welch, J.W. Miller, "On the Relative Impacts of Onroad and Nonroad Heavy-Duty Diesel Emissions," *American Association for Aerosol Research*, Austin, TX, October, 2005.

30. A.K. Chaudhary, A.A. Sawant, S.D. Shah, J.W. Miller, **D.R. Cocker**, "Emissions of Non-Regulated Pollutants From In-use Diesel Backup Generators," *American Association for Aerosol Research*, Austin, TX, October, 2005.

31. A. Nigam, W.A. Welch, K.M. Cocker, **D.R. Cocker**, "PM Emissions from Backup Generators: Method 5 vs. ISO 8178," *American Association for Aerosol Research*, Austin, TX, October, 2005.

32. Q. Malloy, B.A. Warren, C. Song, **D.R. Cocker**, "Impact of Relative Humidity on Gas-Particle Partitioning for the Cyclohexene/Ozone System: Comparison of Experimental and Theoretical Predictions," *American Association for Aerosol Research*, Austin, TX, October, 2005.

33. B.A. Warren, C. Song, **D.R. Cocker**, "The Effect of Dissolved Inorganic Salts on the Formation of Secondary Organic Aerosols for the Cyclohexene/Ozone System," *American Association for Aerosol Research*, Austin, TX, October, 2005.

Professional Activity and Service

Reviewing Activity

- **Jan. 2001- Present:** Reviewed 7 papers for Atmospheric Environment
- **Jan. 2001- Present:** Reviewed 2 articles for Journal of Geophysical Research
- **Jan. 2001- Present:** Reviewed 6 proposals for the National Science Foundation
- **Jan. 2001- Present:** Reviewed 2 articles for Aerosol Science and Technology
- **Jan. 2001- Present:** Reviewed 9 articles for Environmental Science and Technology
- **Oct. 2001-Oct. 2003:** Reviewed proposal to ISTC program
- **Oct. 2003-Oct. 2004:** Reviewed one research proposal for Los Alamos National Laboratory (CARE program)
- **Oct. 2003-Oct. 2004:** Reviewed three research proposals for Department of Energy Atmospheric Sciences Program.
- **Oct. 2003-Oct. 2004:** Reviewed one article for Chemosphere
- **Oct. 2003-Oct. 2004:** Reviewed one article for Environmental Chemistry Letters
- **Oct. 2003-Oct. 2004:** Reviewed one article in Journal of Air and Waste Management Association
- **Aug. 2004- Present:** Reviewed one article for WATE
- **Oct. 2004- Present:** Reviewed one article for Science of the Total Environment
- **Jan. 2005- Present:** Reviewed one article for Canadian Biosystems

- **Feb. 2005- Present:** Reviewed one article for Journal of Environmental Science

Presentations/Talks (See also Abstracts, Symposia/Conference Proceedings, and Posters section above (entries not duplicated) for other presentations)

- **Feb. 2002:** Chancellor's Welcome: "Engineering the Air we Breathe"
- **Apr. 2002: Invited Lecture.** "Engineering the Air We Breathe: Status of Air Pollution Research at UC Riverside," Seminar to University Institute for Chemical Technology, Mumbai, India
- **Oct. 2002: Invited Lecture.** Mira Loma, CA. "A Case Study on the Impact of Local and Regional Sources on Indoor/Outdoor Air Quality," Seminar to Desert Research Institute.
- **Nov. 2002: Invited Lecture.** "A Case Study on the Impact of Local and Regional Sources on Indoor/Outdoor Air Quality," Department of Environmental Science and Toxicology Seminar Series, University of California, Riverside
- **Nov. 2003:** "State-of-the-field: On-road measurements of diesel exhaust," Industry day, 11/2003, UC Riverside, Riverside, CA
- **Mar. 2004:** "Mobile Source Emissions Reduction Forum; Mojave Air Quality Management District," Lancaster, CA, 3/17/04. **Invited Speaker** and Moderator.
- **Sep. 2004: Invited talk.** "Characterization of PM_{2.5} and Selected Gas-Phase Compounds at Multiple Indoor and Outdoor Sites in Mira Loma, CA," College of the Desert, Palm Springs, CA.
- **Oct. 2004: Invited Keynote talk.** "State-of-the-Art Chambers for Aerosol Study: Focus on the UCR/CE-CERT and Caltech Chambers," Zakopane, Poland, October 1, 2004.
- **Feb. 2005: Invited Keynote Talk.** "Evaluations of Secondary Organic Aerosol Processes Using the New UCR Chamber," 22nd Informal Symposium on Kinetics and Photochemical Processes in the Atmosphere. UC Irvine, Feb. 14, 2005.

Memberships

- **1998- Present:** American Association for Aerosol Research (AAAR)
- **2003- Present:** Air Waste Management Association (AWMA)

University Activity and Public Service

Department

- **Jan. 2001-Oct. 2003:** Represented Environmental Engineering on Departmental Undergraduate Committee
- **Jul. 2001-Present:** Transport Preliminary Exam Committee. (Chair since 2005)
- **Jul. 2001-Jun. 2002:** Faculty Search Committee

- **Oct. 2001:** Introduced CEE 233 as new graduate course
- **Dec. 2001:** Represented Environmental Engineering Faculty at Industry Day with State-of the Field talk entitled: "Mobile Lab on Wheels"
- **Mar. 2002:** Introduced CEE 125 as new undergraduate course.

This includes development of in class curriculum and 10 new laboratory units for the course.

- **Sep. 2002-Aug. 2003:** Undergraduate advisor, Environmental Engineering
- **Jul. 2003:** Initiated AWMA student chapter
- **Jul. 2003-Present:** Mentor, AWMA student chapter 2003-
- **Sep. 2003-Present:** Undergraduate advisor, Chemical and Environmental Engineering
- **Oct. 2003-Present:** Departmental Undergraduate Committee (Chair)
- **Sep. 2005-Present:** Space Committee
- **Sep. 2005-Present:** Faculty Search Committee

College

- **Jan. 2001- Present:** CE-CERT Academic Committee
- **Feb. 2001- Present:** Chemical and Environmental Engineering Representative for the College Undergraduate Scholarship Committee
- **Feb. 2001- Present:** Chemical and Environmental Engineering Representative for the College Undergraduate Education Committee
- **Jul. 2001-Present:** Technical Advisory Committee Member on Western Regional Air Pollution Regional Committee
- **Jul. 2001-Aug. 2003:** Environmental Engineering Representative for the College Executive Committee
- **Feb. 2002:** Represented Department of Chemical and Environmental Engineering at Chancellors welcome: presented talk entitled "Engineering the Air we Breathe"
- **Apr. 2002, Apr. 2003, Apr. 2004, May 2005:** Career Day Panel Moderator. Event welcomes back UC Riverside Engineering Alumni with a forum for current undergraduate students on job finding and career choices
- **Sep. 2002-Present:** CE-CERT Seminar Series
- **Sep. 2004-Present:** Representative for Environmental Engineering Department on the College Executive Committee

Campus

- **Jan., Feb. 2004:** Representative for College of Engineering for Chancellor's Welcome (undergraduate student recruitment)
- **May 2004:** Two research presentations for UC Riverside Honors day.
- **Mar. 2005:** Representative for Department of Environmental Engineering at Chancellor's Welcome.
- **Jul. 2005-Jun. 2006:** Campus Breadth Committee

Public

- **Oct. 2001-Oct. 2003:** Multiple presentations to Riverside County Planning Commission addressing concerns about local air pollution (November 13, 2001; January 9, 2002; July 31st, 2002)
- **Sep. 2002:** Presented to Jurupa Valley School District on children's exposure to air pollution
- **Nov. 2002:** Reported to Riverside County Supervisors on air quality issues in Riverside County
- **Jun. 2003- Present:** Riverside City "Model Clean City" Representative. Committee of approximately ten. Members include local government, regulators, industry, and citizens.
- **Sep. 2004- Present:** Hosted/mentored 10 undergraduate student researchers as part of College of the Desert Outreach Program. Program identifies and encourages underrepresented groups to pursue careers in science and engineering.