

SEAS Engineering Invitational

V. Faye McNeill vfmcneill@columbia.edu

Assistant Professor

Department of Chemical Engineering, Columbia University,
New York, NY 10027

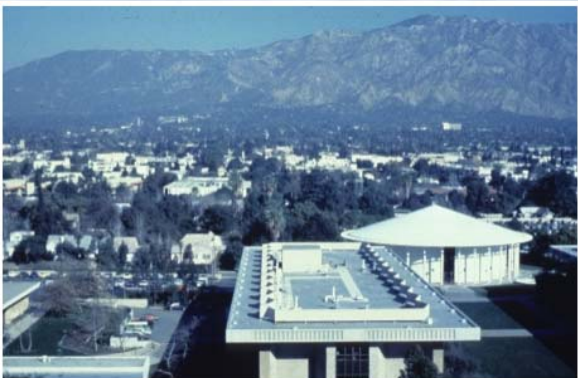
Columbia University

New York, NY

August 13, 2010

About me (the short version!):

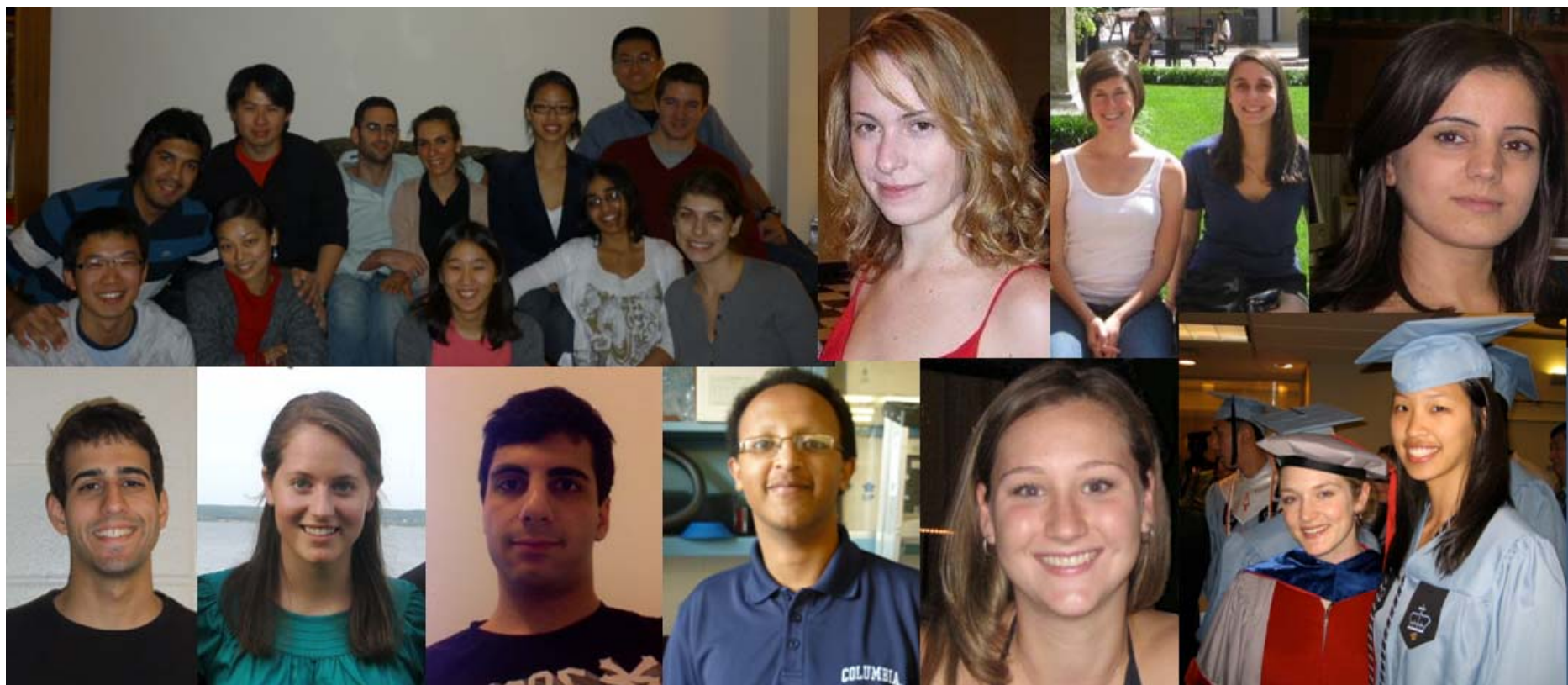
- Public high school in San Francisco Bay area
 - Enjoyed math, chemistry, writing
- Some engineers in the family, but first in family to get Ph.D.
- Undergraduate in Chemical Engineering at Caltech (1999)
- Masters', Ph.D. in Chemical Engineering at MIT (2005)
- Postdoctoral research in Atmospheric Science at University of Washington
- At Columbia since 7/2007



McNeill Group

atmospheric chemistry @ columbia university

<http://www.mcneill-lab.org>

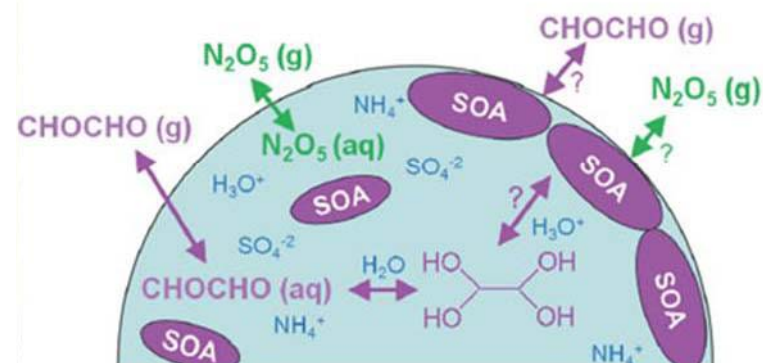
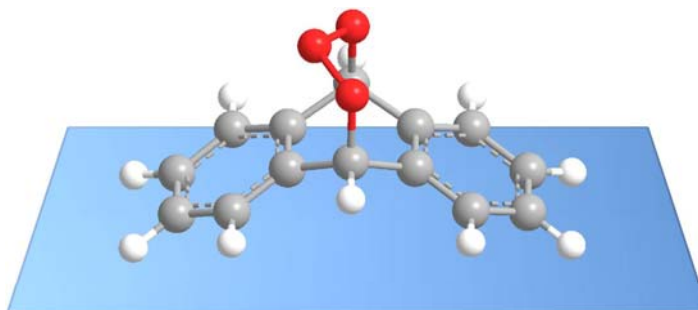


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Research areas

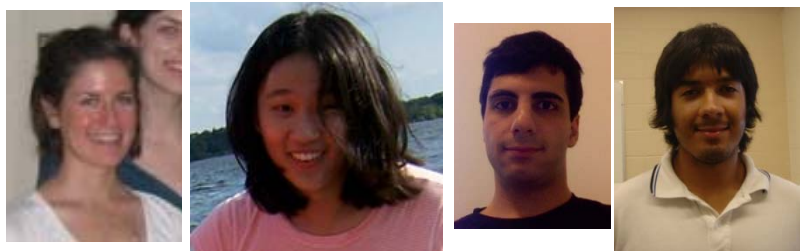
- Sources, chemistry, and climate properties of atmospheric particles
- Atmospheric chemistry of ice and snow



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Undergraduate coauthors on scholarly articles



Atmos. Chem. Phys., 10, 997–1016, 2010
www.atmos-chem-phys.net/10/997/2010/
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Secondary organic material formed by methylglyoxal in a aerosol mimics

N. Sareen, A. N. Schwier, **E. L. Shapiro, D. Mitroo,** and V. F. McNeill
Department of Chemical Engineering, Columbia University, New York, NY, USA

Glyoxal-Methylglyoxal Cross-Reactions in Secondary Organic Aerosol Formation

ALLISON N. SCHWIER, NEHA SAREEN,
DHRUV MITROO, ERICA L. SHAPIRO,
AND V. FAYE MCNEILL*

Department of Chemical Engineering, Columbia University,
New York, New York 10027

Received April 17, 2010. Revised manuscript received June
28, 2010. Accepted July 6, 2010.

Glyoxal (G) and methylglyoxal (MG) are potentially important

unlikely
These hi
and part
aqueous
may oc
oligome
expected
have sho
G and M
the opti
aerosol
atmosph
study th
most like
In th
together
sulfate
absorbin
troposph

Atmos. Chem. Phys., 9, 2289–2300, 2009
www.atmos-chem-phys.net/9/2289/2009/
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the Creative Commons Attribution 3.0 License.



Light-absorbing secondary organic material formed by glyoxal in aqueous aerosol mimics

E. L. Shapiro, J. Szprengiel, N. Sareen, **C. N. Jen, M. R. Giordano,** and V. F. McNeill
Department of Chemical Engineering, Columbia University, New York, NY, 10027, USA

Received: 27 October 2008 – Published in Atmos. Chem. Phys. Discuss.: 5 January 2009
Revised: 23 March 2009 – Accepted: 23 March 2009 – Published: 1 April 2009

Choosing a college

- Research the best schools FOR YOUR INTEREST AREA
- Undergraduate research opportunities
- Size of the program
- Student/Professor ratio
- Other things that might be important to you
 - Study abroad?
 - Double majoring?
 - Sports/Music/Other



Opportunities for High School Students

- Cogito.org (Johns Hopkins CTY) internship database
<http://www.cogito.org/Programs/programslist.aspx?internships>
- University, National Lab summer programs
<http://www.bnl.gov/education/>
- NSF high school summer programs
http://www.nsf.gov/news/news_summ.jsp?cntn_id=111243
- Museum programs
- AIChE
<http://www.aiche.org/Students/Careers/highschoolresources.aspx>
- Externships

science of the atmosphere

an informational gateway for students, educators, and families

[Home](#) [En Español](#) [What's In the Air?](#) [Ask a Scientist!](#) [Glossary](#) [Links](#) [Contact Us](#)

A [What's in the air?](#)

for educators

environmental research at Columbia University

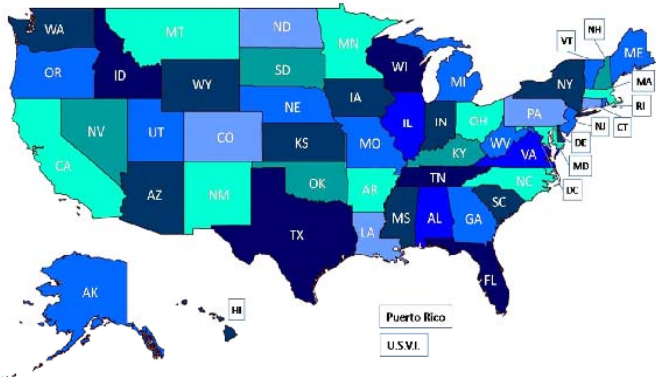
interesting links

credits

contact us

Gases such as ozone, and particulates in the air affect human health. Air quality (AQ) is a term used to describe the levels of substances in the air. The daily air quality index (AQI) is a measure of the "healthiness" of the atmosphere. Air quality is the end result of many natural & human-driven processes.

Click on the map below to get an up-to-date air quality report for



B [Air Quality Information - Windows Internet Explorer](#)

Commonwealth of Virginia | Governor

Virginia DEQ - Air Quality Information

Main Menu

Virginia air quality information - July 10, 2008 - 3:59 PM

Regional Air Quality

Northern Virginia

Arlington County

Prince William County

Fairfax County (Franconia)

Fairfax County (Chantilly)

Loudoun County

Fairfax County (Arlington)

Fairfax County (MT)

Region	Current Conditions		Forecast for July 10, 2008	
	Air Quality Index	Primary Pollutant	Forecast	Primary Pollutant
Northern Virginia	Good - 47	Ozone	Moderate	Ozone
Richmond Area	Good - 43	Ozone	Moderate	Ozone
Hampton	Good - 43	Ozone	Moderate	Ozone

C [¿Que contiene el aire?](#)

Los gases, como el ozono, y materia particulada.

La Calidad del Aire es un término usado para describir la calidad del aire que respiramos.

La Calidad del Aire es el producto final de muchos procesos que ocurren en la atmósfera.

Haga click en la mapa para ver un informe de la calidad del aire en su región.

- Bilingual (English-Spanish)
- What's in the air?
- Ask a Scientist!
- Glossary
- COMING SOON: Educational Resources

<http://www.mcneill-lab.org/outreach/wordpress/>

For more information

- The McNeill Group www.mcneill-lab.org
- American Institute of Chemical Engineers
www.aiche.org
- Profiles of Chemical Engineers
<http://www.careercornerstone.org/chemeng/profiles/chemengprofiles.htm>
- American Chemical Society www.acs.org
- ACS Scholars (*scholarship program for African American, Hispanic, and American Indian Students*)
http://portal.acs.org/portal/acs/corg/content?nfpb=true&pageLabel=PP_SUPERARTICLE&node_id=1648&use_sec=false&sec_url_var=region1&uuid=524a9b5b-0c79-4738-a941-67f611eb66f2
- Society of Hispanic Professional Engineers (SHPE)
www.shpe.org
- National Society of Black Engineers (NSBE) www.nsbe.org
- National Organization for the Professional Advancement of Black Chemists and Chemical Engineers (NOBCChE) <http://www.nobcche.org/>