

American Chemical Society

Communicating Chemistry:

Viktor Obendrauf Demonstration Lecture

11th ECRICE & 22nd ICCE

July 19, 2012

Rome, Italy

Bassam Z. Shakhashiri

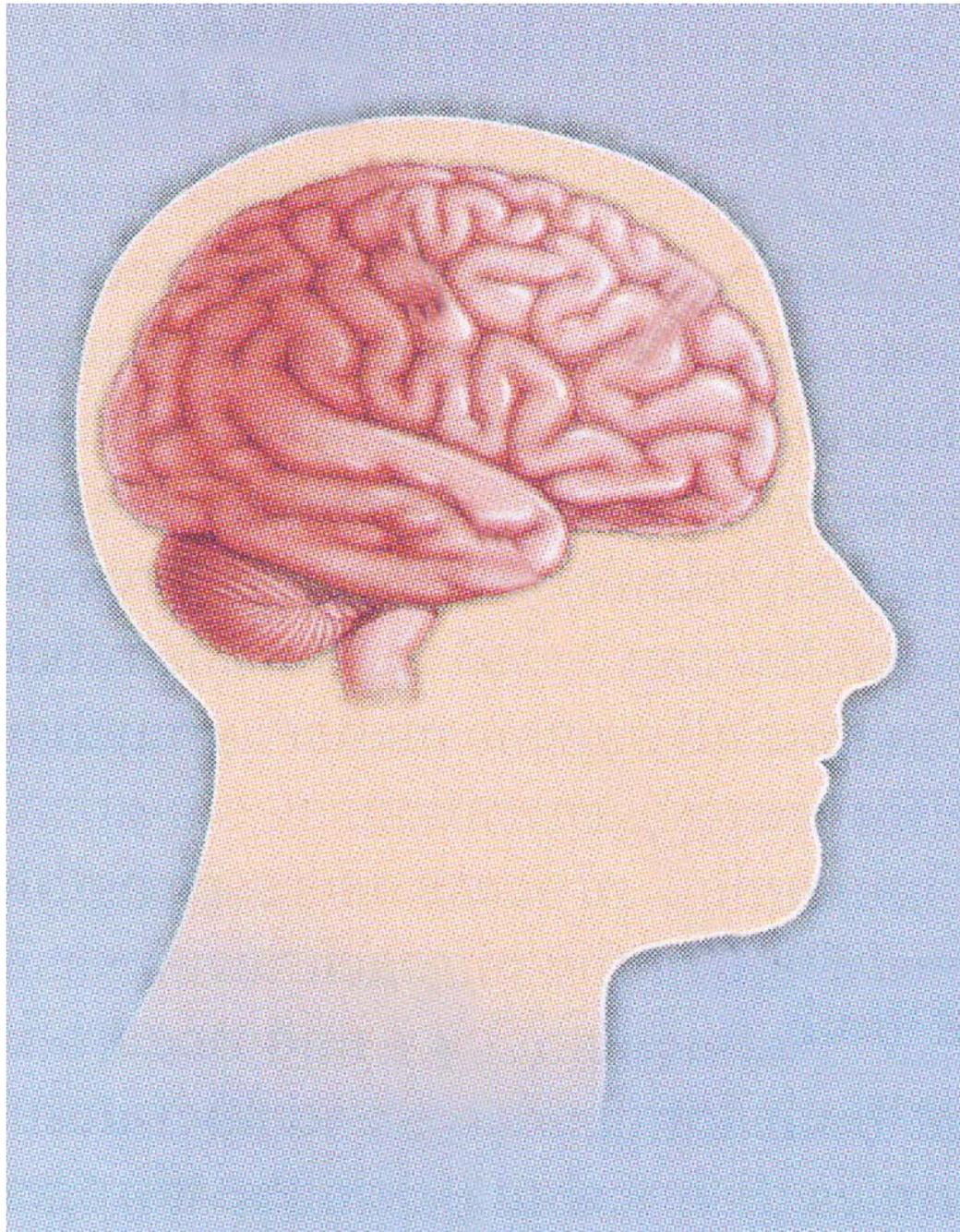
President, American Chemical Society

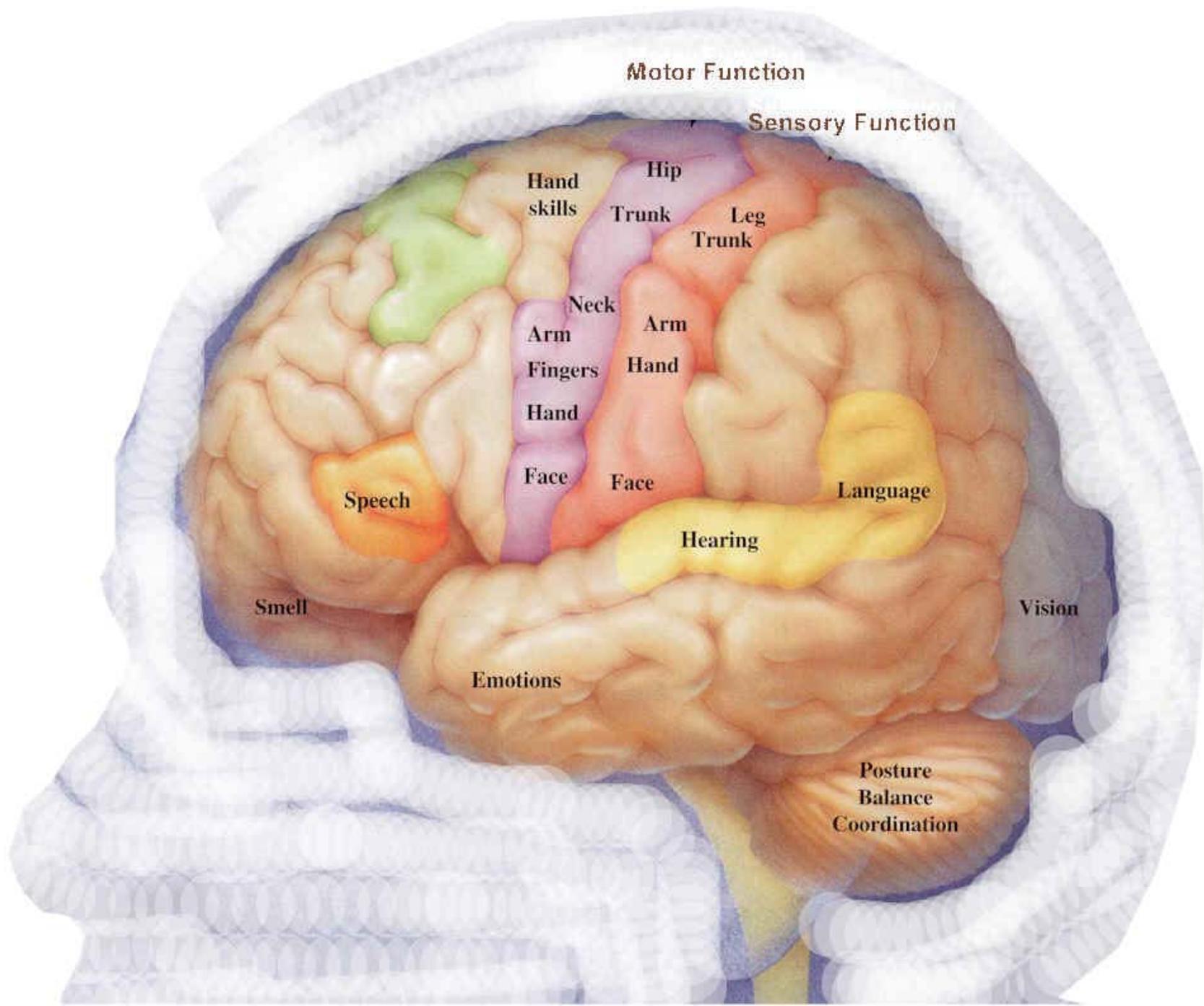
Professor of Chemistry

The William T. Evjue Distinguished Chair for the Wisconsin Idea

University Wisconsin-Madison







ACS MISSION

Advance the broader chemistry enterprise and its practitioners for the benefit of Earth and its people.

ACS VISION

Improving people's lives through the transforming power of chemistry.

www.acs.org

EDUCREATIVE CHEM

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SACRED HEART U

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ICCE
International Conference on Chemical Education

IUPAC

19th International Conference on Chemical Education

"Chemistry and Chemical Education for Humanity"

August 12-17, 2006
Seoul, KOREA

KCS

500 mL ±5%

400

300



Grand Challenges to Society and to Scientists

Help sustain Earth and its people in the face of:

- **Population growth**
- **Finite resources**
- **Malnutrition *and* obesity**
- **Spreading disease**
- **Deadly violence**
- **War**
- **Climate change**
- **Denial of basic human rights, *especially the right to benefit from scientific and technological progress.***

**SCIENCE AND SOCIETY HAVE
WHAT IS ESSENTIALLY A SOCIAL CONTRACT
THAT ENABLES GREAT INTELLECTUAL ACHIEVEMENTS
BUT COMES WITH MUTUAL EXPECTATIONS
OF BENEFITING THE HUMAN CONDITION
AND PROTECTING OUR PLANET.**

Trust

Confidence

Respect

Scientific
Complexity



Bohr "pure basic research"	Pasteur "use-inspired basic research"
	Edison "pure applied research"



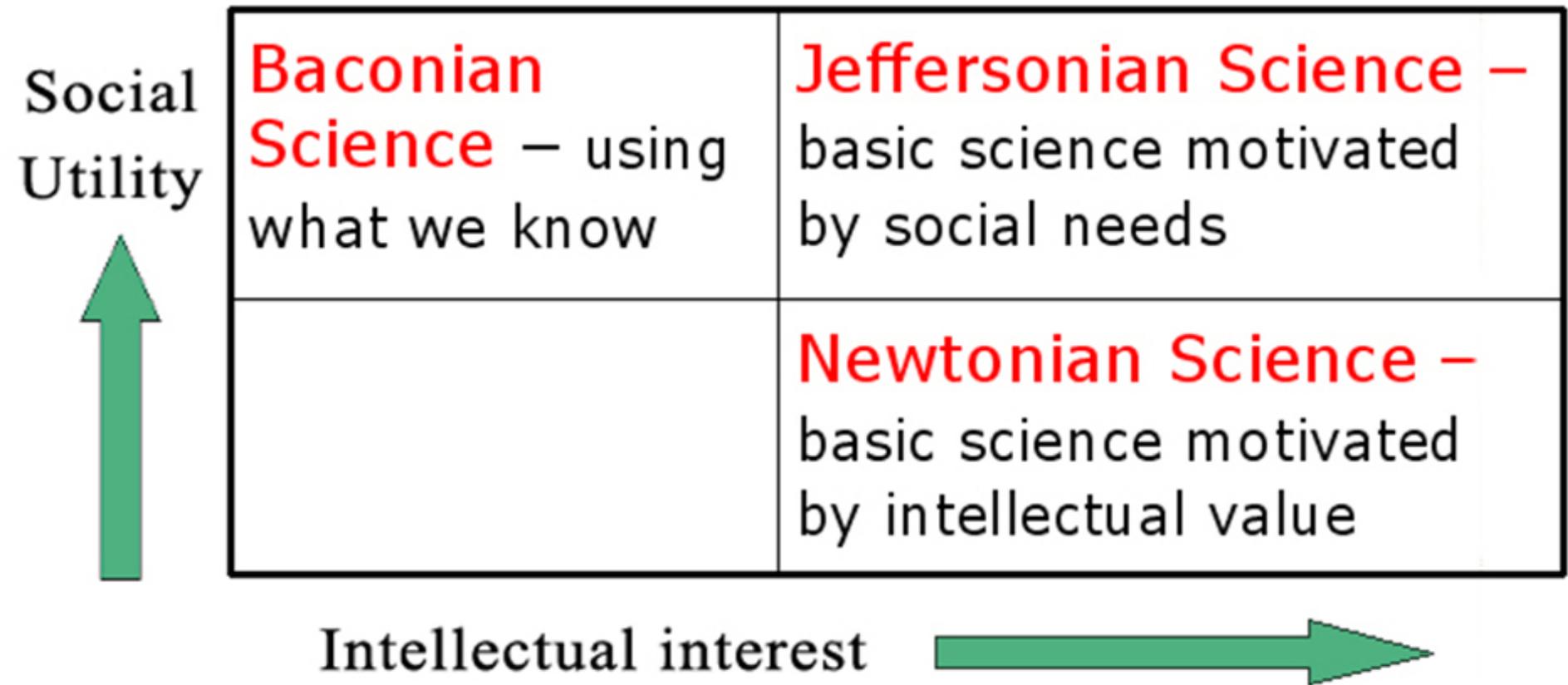
Social utility

PASTEUR'S QUADRANT

Basic Science and Technological Innovation

Donald Stokes

Brookings Institution Press, 1997



Ivory
Bridges

Connecting Science and Society

Sonnert and Holton

MIT Press, 2002

Industrial Revolution

Industrial Revolution

Electronic Revolution

Science-rich Sector

Science-poor Sector

Scientific Competence

Scientific Expertise

Science Literacy

Science Literacy is for Everyone

Chemists, Artists, Humanists,
All Professionals, The General Public,
Youth and Adults Alike

Advancing Chemistry



Communicating Chemistry

Presidential Initiatives for 2012

- Initiative 1:** ACS and the Sesquicentennial of the Morrill Land Grant Act
- Initiative 2:** ACS Commission to examine purposes of graduate education in the chemical sciences
- Initiative 3:** Helping the public understand the *science* of climate change
- Initiative 4:** Explore High School Teacher Fellowship Program

Advancing Chemistry

Research

Education

Innovation

Communication

Inform
Engage
Educate
Advocate
Persuade

WISL Graduate Student Awards to Promote Communicating Chemistry

- All Ph.D. chemistry candidates are encouraged to include a chapter in their Ph.D. thesis communicating their research to non-specialists.
- Cash awards of \$500 will be given to the first 10 individuals whose Ph.D. thesis includes such a chapter.
- The goal is to explain the candidate's scholarly research and its significance to a wider audience that includes family members, friends, civic groups, newspaper reporters, state legislators, and members of the U.S. Congress.
- WISL will assist in the public dissemination of these contributions and will seek to increase the number of these awards.

www.scifun.org

CONNECTIVITY

Chemical Demonstrations

A Handbook for Teachers of Chemistry

Volume **5**

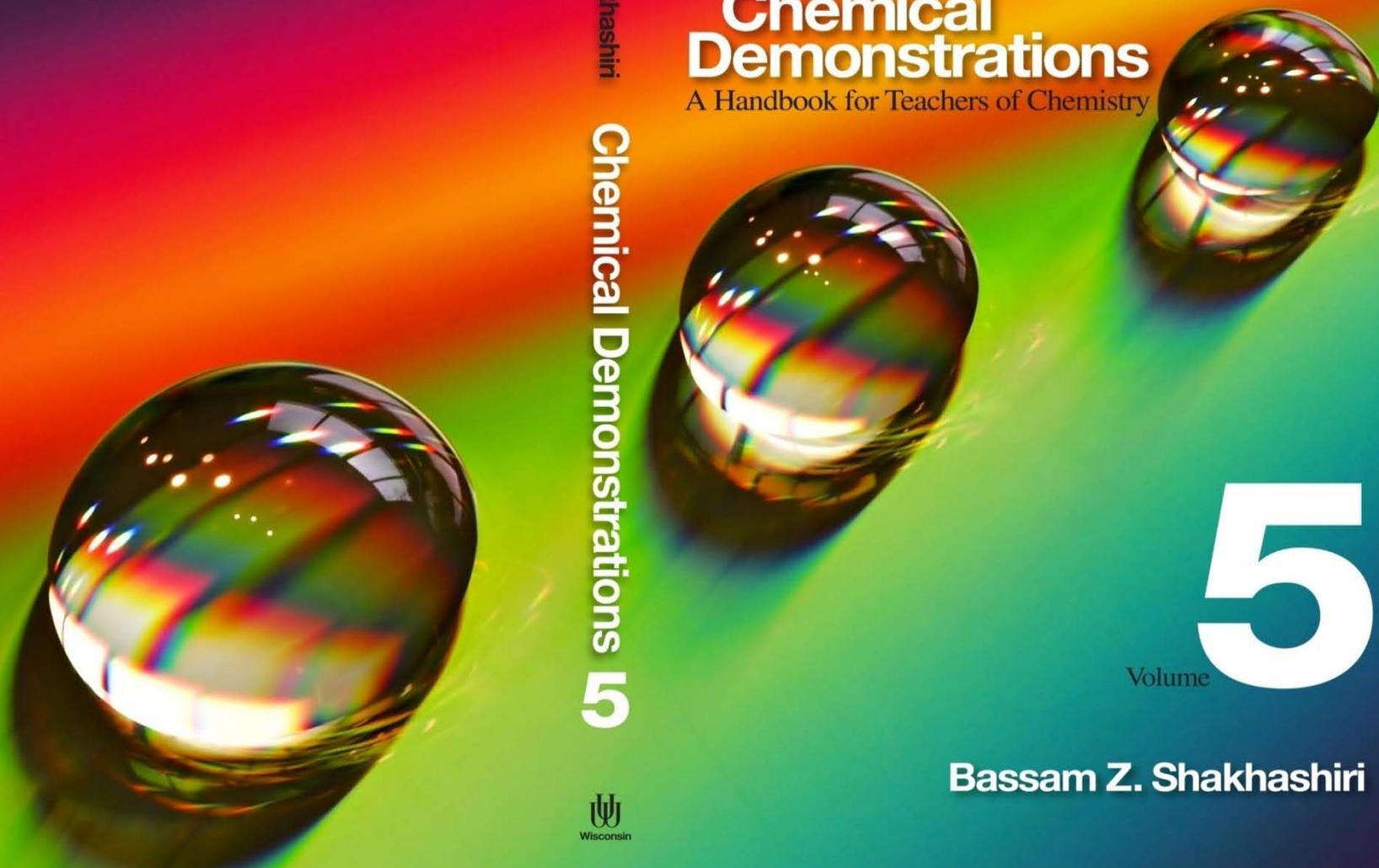
Bassam Z. Shakhshiri

Shakhshiri

Chemical Demonstrations **5**



Wisconsin





Advancing Chemistry



Communicating Chemistry

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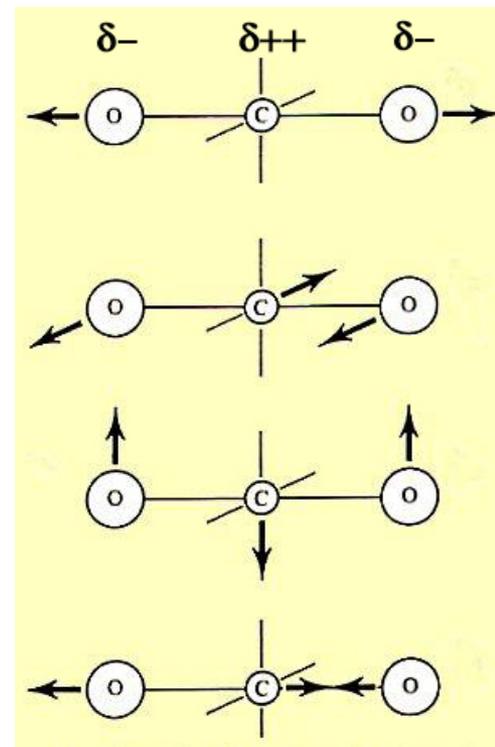
Charge to the Presidential Climate Science Working Group



- **Develop a “Toolkit” on the science of global climate change to enhance the knowledge of ACS members and enable them to discuss climate change with greater confidence.**
- **Articulate strategies for members’ use of the Toolkit in communicating with a variety of audiences, consistent with ACS policy statements. Audiences include educators, civic and religious groups, professional organizations and elected officials at all levels of government.**

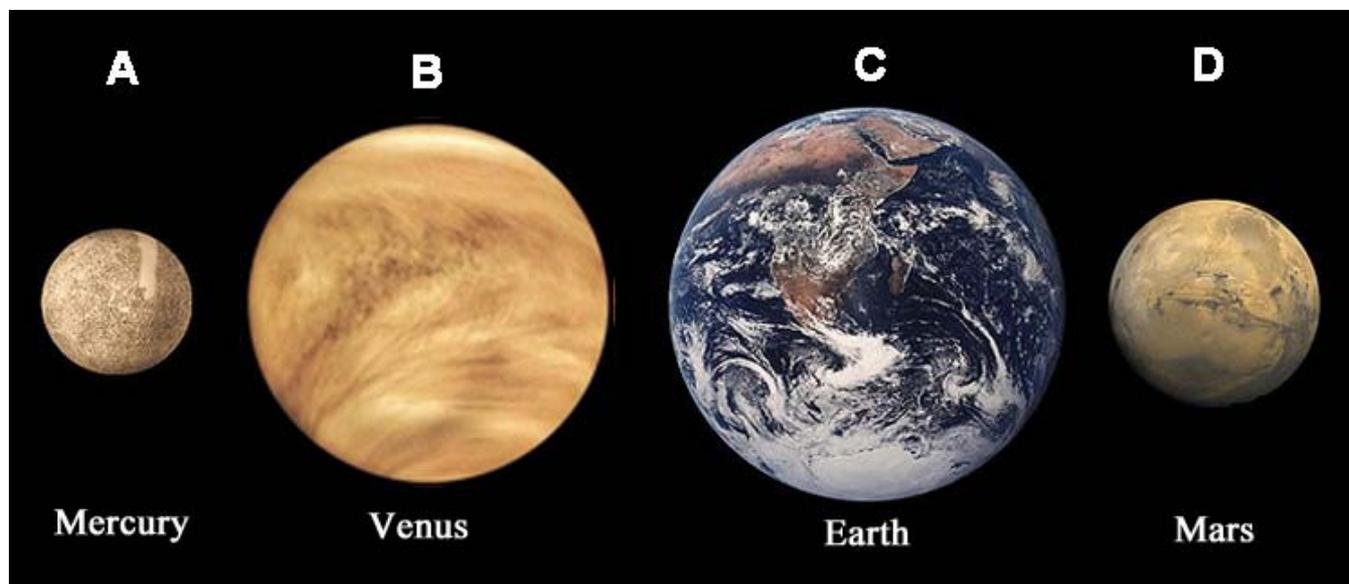
ACS Climate Science Toolkit

- To absorb IR energy, molecular vibrations must change the dipole moment of the molecule.
- All molecules with three or more atoms meet this criterion and are IR absorbers.
- The trace gases in Earth's atmosphere contain many species that absorb IR.



ACS Climate Science Toolkit

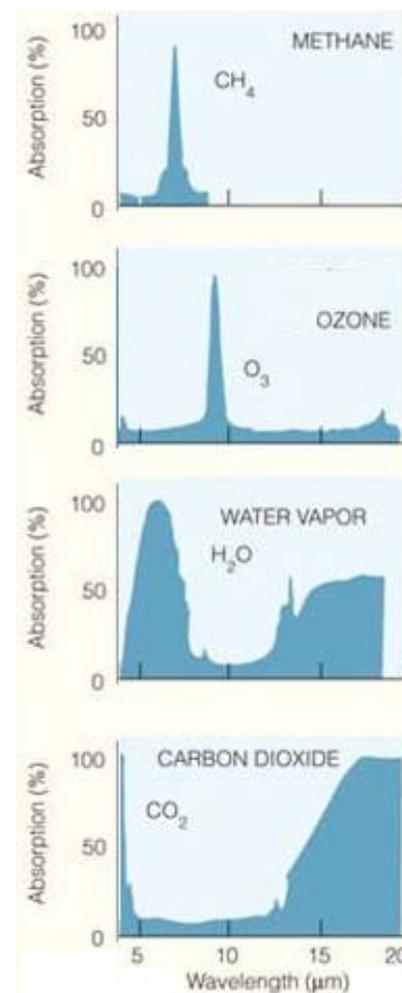
Which of the inner four planets in the solar system has the highest average surface temperature (and **why**)?



ACS Climate Science Toolkit

Which gas is responsible for the largest fraction of the Earth's atmospheric greenhouse warming effect?

- A. methane
- B. ozone
- C. water vapor
- D. carbon dioxide

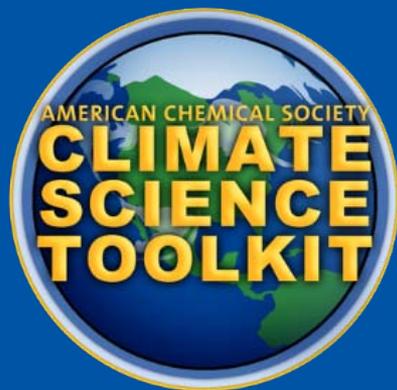


American Chemical Society



ACS Climate Science Toolkit

Tools to better understand and
communicate climate science



www.acs.org/climatescience

American Chemical Society



Presidential Commission on Graduate Education in the Chemical Sciences

Presidential Commission on Graduate Education in the Chemical Sciences

Charge:

- **What are the purposes of graduate education in the chemical sciences?**
- **What steps should be taken to ensure that graduate education addresses important societal issues as well as the needs and aspirations of graduate students?**

ACS Presidential Commission on Graduate Education in the Chemical Sciences

Major Tasks

- **Consider fundamental, comprehensive, and systemic changes suitable for graduate education in the chemical sciences.**
- **Suggest actionable approaches for enhancing the quality of graduate education at all institutions.**

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Scientist-Citizen

SCIENCE IS FUN

www.scifun.org