



February, 2007
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Central Texas ACS

Newsletter of the Central Texas Section of the American Chemical Society

Thursday, February 22nd, 6:30 – 9:00 pm:

The Origins of the Chemical Elements

current astronomical evidence for the synthesis of elements by
the Big Bang, stars, and cosmic rays

Dr. David Lambert

University of Texas at Austin

Director of the McDonald Observatory

Isabel McCutcheon Harte Centennial Chair in Astronomy

Biographical Sketch

Born and educated in England, Dr. David Lambert obtained a B.A. in physics in 1960 and a Ph.D. in solar physics in 1965 from Oxford. His contributions to research in astronomical spectroscopy have been recognized with numerous prestigious awards and appointments including a John Simon Guggenheim Memorial Fellowship and the Dannie Heineman Prize for Astrophysics by the American Institute of Physics and the American Astronomical Society for “establishing a new standard of precision for the quantitative analysis of stellar spectra.” Dr. Lambert is one of the most productive and innovative astronomers in the world. In over 40 years of research, Dr. Lambert has over 450 publications, 375 in refereed journals. David has established the fields of Cosmochemistry and Galactochemodynamics and continues to lead them. He has lead an active and focused research group at the University of Texas for many years, usually consisting of postdoctoral fellows, research associates and Ph.D. students. His current research emphasizes precise analyses of the composition of evolved stars to determine how the chemical elements are synthesized by stars, along with studies of the chemical evolution of the Galaxy as revealed by the chemical composition of unevolved stars.

Johnny Carino's Restaurant
5601 Brodie Lane #1600, Austin

Social "hour" from 6:30pm- 7pm. Dinner
7-8pm, Talk 8pm - 9pm

Dinner \$10 - Students \$5

RSVP by February 19 at (512) 232-0680
Or email chair@centraltexasacs.org

The depth and breadth of David's impact on astronomy have only increased since he assumed the directorship of the McDonald Observatory in 2003. David has energized the astronomy program; he is bringing the Hobby Eberly Telescope to the first-rank of research telescopes, heading the effort to create the Dark Energy Experiment, and tirelessly leads our nation's involvement in the next generation of great astronomical machines, the Giant Magellan Telescope. Dr. Lambert was recently awarded the 2007 Henry Norris Russell Prize of the American Astronomical Society. The Russell Lecturer is normally to be chosen annually on the basis of a lifetime of eminence in astronomical research.

Central Texas ACS: February 2007 Chair's Page

Letter from the Chair

Hello Colleagues,

The first meeting of 2007 went extremely well, thanks to Dr. Wayne Jones for coming and speaking! For those who missed the presentation, Dr. Jones spoke of chemical sensors that turn on or off in the presence of specific oxidized metal species. Dr. Jones also highlighted new methods for creating better heat transfer to thermal sinks in computer chips using nano-fibers. Dr. Jones did an excellent job of presenting the material making it interesting for all.

What impressed me most about our first meeting was the outstanding number of attendees! We had an impressive turn out, and I hope to see the same for February. The topic for this next meeting is sure to draw a crowd. I wanted to select a subject that most chemists don't know a lot about, but would find fascinating and compelling. On February 22nd, Dr. David Lambert will speak on 'The Origins of the Chemical Elements,' and will highlight current astronomical evidence for the synthesis of elements by the Big Bang, stars, and cosmic rays. I would like to invite you to come out, enjoy some Italian food, listen and learn.

Coming in March Dr. Frankie Wood-Black will educate us on the chemistry of oil refining, and the forces that drive the cost of gasoline.

April is of course when ACS celebrates Earth Day! Chemists Celebrate Earth Day is a community-based program of the Office of Community Activities. This annual event unites the ACS local section, businesses, schools and individuals in communicating the importance of chemistry to our quality of life.

This year's theme is "Recycling All We Can." The locally sponsored event will be held in conjunction with the Austin Nature and Science Center's

"Austin Nature Day" on Saturday, April 21 from 12-4 pm. Specific details will follow in future newsletters. Also keep an eye out for ways you can Reduce, Reuse, and Recycle at home in our March and April newsletters.

Again I would like to comment on how I had such a great time at our first meeting! I enjoyed speaking with everyone, and getting to know people. There are still a lot of folks in this section that I have yet to meet. Hopefully I'll see you on the 22nd!

Sincerely,
Jackie Padilla, Chair

Dr. David Lambert's Abstract:

The Origins of the Elements

How, when, and where were the chemical elements from hydrogen to uranium made? The correct answers to these fundamental questions began to emerge only in the late 1950s. Today, we are confident about our answers yet with intriguing puzzles outstanding. Progress has been possible through a melding of astronomy, nuclear physics, and spectroscopy of atoms and molecules. Casual perusal of chemistry textbooks show that the correct answers to these fundamental questions are rarely provided!

The talk will review element synthesis by the Big Bang that occurred 14 billion years ago, and the role of stars - big and small, single and double - in synthesizing elements over the last 12 billion years. A supplement to element synthesis provided by interactions in interstellar space between cosmic rays and interstellar atoms will be described. The talk will show why some elements are common (carbon, nitrogen, and oxygen, for example) and some are rare (light elements such as lithium, beryllium and boron, and heavy elements such as the precious metals silver, gold, and platinum).

Central Texas ACS: February 2007 Calendar of Events

Thursday, February 22

Speaker: Dr. David Lambert

“The Origins of the Chemical Elements
Highlighting the current astronomical evidence for
the synthesis of elements by the Big Bang, stars,
and cosmic rays”

Johnny Carino’s Restaurant

6:30 pm – 9:00 pm

5601 Brodie Lane #1600, Austin



Thursday, March 8

Speaker: Dr. Frankie Wood-Black

“Just where does gasoline come from? And what is
octane?”

Iron Cactus

10001 Stonelake Blvd.

Austin, TX 78701

6:30 pm – 9:00 pm

March 25-29

American Chemical Society
233rd National Meeting & Exposition
McCormick Place Convention Center
Chicago, IL USA

Saturday, April 21

Chemists Celebrate Earth Day

“Recycling All We Can”

The Central Texas ACS will join with the Austin Nature and Science Center to celebrate “Austin Nature Day” and “Chemists Celebrate Earth Day.” This year’s theme is “recycling – chemistry can.” This annual event unites ACS local section, businesses, schools, and individuals in communicating the importance of chemistry to our quality of life.

Volunteer for this event by contacting:

Betsy McGrew, email:

Chair-elect@ CentralTexasACS.org



Tuesday, April 24th

Speaker: Dr. David Allen

Annual Award Banquet

The University of Texas Club

2108 Robert Dedman Drive

Austin, TX 78712

6:30 pm – 9:00 pm

→ visit www.CentralTexasACS.org

