

Dalton Discussion 11: The Renaissance of Main Group Chemistry

Dalton Discussion meetings focus on research at the cutting edge of inorganic chemistry and they bring together some of the world leaders in this area of research for an intensive, three day meeting. Dalton Discussion 11 was held from 23-25 June 2008 at the University of California, Berkeley. This was the first time a DD meeting was held outside Europe.

With the aim of highlighting some of the more important recent developments in the area of main-group chemistry, the conference was organized around four general themes:

- Main group multiple bonds and unusual oxidation states
- Main group in macromolecules/ rings/ clusters
- Main group elements as ligands in organometallic chemistry and coordination complexes
- Main group materials

Each session was opened with a 45-minute Keynote address, and the majority of papers were presented in shorter 10 minute presentations. Prior to the meeting, all papers were submitted, refereed and sent to the participants for them to read. In addition, a large number of poster presentations were made at the meeting.

On Monday afternoon, P.P. Power (UC Davis) led off the first session with a presentation on recent highlights in low-valent group 14 chemistry, including a discussion of the importance of diradicals in this area. Short presentations relating to new work on Ga, Ge, and B chemistry were given by C. Jones (Monash), N. Tokitoh (Kyoto), and A.H. Cowley (Texas). Following a lively panel discussion, a second Keynote talk was given by H. Schnoekel (Karlsruhe) on his work in metalloid cluster involving Al and Ga. K. Seppelt described his recent work on Te and Se cations and the session concluded with further discussion of diradicals in a later presentation by Y. Jung (Cal Tech) who introduced high-level DFT as applied to this problem.

Ian Manners opened the second session on Tuesday morning by describing his group's work on polymeric materials involving main group elements. Metalloid compounds again featured in A. Schnepf's presentation describing Ge₁₈ cluster species before F. Gabbai (Texas A&M) took to the podium to present his work on fluoride ion complexation by unusual tridentate Lewis acids. The polymer theme was continued by D. Gates (UBC), this time featuring phosphorous-based materials, and C.A. Reed described recent studies on attempts to prepare unusual dicationic species.

The afternoon session began with a Keynote address by M. Scheer (Regensburg) that focused on group 15—metal interactions with an emphasis on phosphorous ligands. Combining DFT studies with synthesis, C.C. Cummins (MIT) presented recent results on reactive early metal complexes also with phosphorous. A similar combination of theory and synthesis was present in P.J. Brothers' (Auckland) talk on boron porphyrins and corroles. Use of the very topical β -diketiminato ligand in main group systems was discussed by M.S. Hill (Bath), with particular

emphasis on calcium derivatives. The final two short presentations featured work from G. Bertrand (UC Riverside) who discussed electronic communication between radicals across a phenylene linker and R. Waterman (Vermont) who described some chemistry of complexes containing Zr—As interactions with a focus on dehydrocoupling reactions.

On Tuesday evening, a conference banquet was held at the Berkeley City Club (a California State Historical Landmark) where a large number of delegates gathered for dinner in the ballroom of this famous old building, which was founded in 1927 and designed by the famous architect, Julia Morgan.

On Wednesday morning, the last session continued the discussion of materials chemistry from the previous day with a Keynote given by P. Yang (Berkeley), who described his group's work on silicon nanowires and their use in electronic devices. The theme continued with P. O'Brien (Manchester) and his presentation describing the influence of ligands on formation of semiconductor materials. Electronic materials were also the focus of F. Jaekle's talk on diboradiferrocenes. The last talk returned delegates to a topic that had been discussed throughout the meeting, namely the problem of hydrogen storage. Using theory and synthesis, T. Autry (PNNL) presented the case for use of ammonia-borane chemistry toward this important goal.

Interspersed throughout the sessions were 'flash' presentations of some of the posters: each speaker had one minute and one slide to describe their chemistry. (Fans of Monty Python may consider the time generous in comparison to that allocated to contestants in the 'All-England Summarize Proust Competition' where the goal was to summarize all seven volumes of *À la Recherche du Temps Perdu* in fifteen seconds.)

Professor F. Gabbai organized the poster session on behalf of the ACS's Division of Inorganic Chemistry (DIC) and was in-hand to present several prizes at the end of the conference.

As in previous DD events, one of the highlights of this meeting was the breadth and interdisciplinary nature of the discussion. Unlike large meetings that have multiple concurrent sessions, delegates at DD11 listen to one presentation at a time across all four sessions. Accordingly, they gain insights into the latest developments in areas outside of their own specialty.

I would like to thank all involved in making DD11 such a success, including colleagues on the organizing committee: Simon Aldridge (Oxford), Claire Carmalt (UCL), Malcolm Chisholm (Ohio State), and Don Tilley (UC Berkeley). I am also very grateful for the support provided by the Division of Inorganic Chemistry of the ACS, whose Chairs – past and present – have supported the idea of bringing a DD meeting to the US. Professor F. Gabbai deserves special thanks for making the poster sessions a success. In addition, the meeting could not have been held without the hard work of Jamie Humphrey and Rebecca Quine from the RSC.

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