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1999 GORDON RESEARCH CONFERENCE

on Molten Salts and Liquid Metals

FINAL PROGRESS REPORT

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The Gordon Research Conference (GRC) on Molten Salts and Liquid Metals was held at New England College, Henniker, New Hampshire July 25-30 1999. The conference was well attended with 71 participants. The attendees represented the spectrum of endeavor in this field coming from academia, industry, and government laboratories, both US and foreign scientists, senior researchers, young investigators, and students.

In designing the formal speakers program, emphasis was placed on current unpublished research and discussion of the future target areas in this field. There was a conscious effort to stimulate lively discussion about the key issues in the field today. Time for formal presentations was limited in the interest of group discussions. In order that more scientists could communicate their most recent results, poster presentation time was scheduled. In addition to these formal interactions, "free time" was scheduled to allow informal discussions. Such discussions are fostering new collaborations and joint efforts in the field (program enclosed).

I want to personally thank you for your support of this Conference. As you know, in the interest of promoting the presentation of unpublished and frontier-breaking research, Gordon Research Conferences does not permit publication of meeting proceedings. If you wish any further details, please feel free to contact me. Thank you.

Dr. David L. Price
Conference Chair

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Sunday, July 25

2:00-6:00 p.m. Registration

6:00-7:00 Dinner

Session I: Room-temperature salts

Discussion leader: **Hugh C. de Long** (AFOSR, Arlington, Virginia)

7:30 **Hélène Olivier-Bourbigou** (Inst. Français du Petrole, Rueil-Malmaison):
Overview of the applications of non-aqueous ionic-liquids in chemical processes

8:30 **Ying-Sing Fung** (Hong Kong Univ.):
Advantages and limitations of LiCl-enriched MEIC room-temperature molten salt as a lithium battery medium

9:30 Reception, sponsored by Containerless Research, Inc. and Gordon Conferences Chair's Fund.

Monday, July 26

7:30-8:30 a.m. Breakfast

Session II: Technological applications of molten salts

Discussion leader: **Charles L. Hussey** (Univ. of Mississippi)

9:00 **Michel Cassir** (ENSCP, Paris, France):

Interest and applications of molten carbonates in the field of fuel cells, catalysis and waste treatment

10:00 Break (group photograph)

10:30 **Gery R. Stafford** (NIST, Gaithersburg, Maryland):
Electrodeposition of transition metal-aluminum alloys from room-temperature chloroaluminate molten salts

11:30 **Yasuhiko Ito** (Kyoto Univ., Japan):
Electrochemistry of hydrogen and nitrogen in molten salt systems

12:30-1:30 p.m. Lunch

6:00-7:00 Dinner

Session III: Interactions in liquid metals

Discussion leader: **John Hernandez** (University of North Carolina)

7:30 **Adriaan A. Louis** (Cambridge Univ., UK):
Liquid metals as electron-ion mixtures: correlations and interactions

8:30 **F. Javier Bermejo** (CSIC Madrid, Spain):
Collective dynamics in LiPb alloys

Tuesday, July 27

7:30-8:30 a.m. Breakfast

Session IV: Molten fluorides

Discussion leader: **Bernard Gilbert** (Univ. of Liège, Belgium)

9:00 **Catherine Bessada** (CRPHT, CNRS Orléans, France):
High-temperature NMR study of cryolitic melts

10:00 Break

10:30 **Mark Wilson** (Oxford Univ., UK):
Computer simulation of molten salts - relationship to experiment

11:30 **George N. Papatheodorou** (Univ. of Patras, Greece):
Light scattering from fluoride melts

12:30-1:30 p.m. Lunch

5:00-6:00 Preparation for Poster Session I

6:00-7:00 Dinner

Session V: Binary Salt Systems

Discussion leader: **Friedrich Hensel** (Philipps Univ. of Marburg, Germany)

7:30 **Ashok Adya** (Univ. of Abertay, UK):
Melting Neutron diffraction and simulation techniques for an in-depth probing of molten salts

8:30 **Marie-Louise Saboungi** (Argonne National Laboratory, Argonne, Illinois):
Constriction, bond breaking and conduction in polymer electrolytes

9:30 Poster Session I

Wednesday, July 28

7:30-8:30 a.m. Breakfast

Session VI: Clustering in liquid metals

Discussion leader: **Kozaboro Tamura** (Univ. of Hiroshima, Japan)

9:00 **W. Christian Pilgrim** (Philipps Univ. of Marburg, Germany):
Dynamics and clustering in liquid alkali metals and liquid alkali amalgams

10:00 Break

Session VII: Molten oxides and carbonates

Discussion leader: **Chun K. Loong** (Argonne National Laboratory, Illinois)

10:30 **Peter H. Poole** (Univ. of Western Ontario, Canada):
Thermodynamic stability of molten, crystalline, and glassy silica

11:30 **Hideo Ohno** (Spring-8 Project, Japan):
Complementary application of neutron and X-ray diffraction for molten alkali carbonates

12:30-1:30 p.m. Lunch

6:00-7:00 Dinner

Session VIII: Metal-insulator and liquid-glass transitions

Discussion leader: **J. Woods Halley** (University of Minnesota)

7:30 **John E. Enderby** (Bristol Univ., UK):
Liquid semiconductors: a bridge between molten salts and liquid metals

8:30 **Mark A. Ratner** (Northwestern University, Evanston, Illinois):
Glasses, landscapes, proteins and rearrangements

Thursday, July 29

7:30-8:30 a.m. Breakfast

Session IX: Levitated liquids at high-temperature

Discussion leader: **Francis Millot** (CRPHT, CNRS Orléans, France)

9:00 **J. K. Richard Weber** (Containerless Research Inc., Evanston, Illinois):
Investigation of molten oxides under containerless conditions

10:00 Break

10:30	**Ivan Egry** (DLR, Cologne, Germany): *Structure and properties of levitated liquid metals*
11:30	**Won-Kyu Rhim** (JPL, Pasadena, California): *Investigation of molten metals and semiconductors isolated by electrostatic levitation*
12:30-1:30 p.m.	Lunch
5:00-6:00	Preparation for Poster Session II
6:00-7:00	Dinner

Session X: Salt-in-polymer solutions

Discussion leader: **Marie-Louise Saboungi** (Argonne National Lab., Illinois)

7:30	**Michel Armand** (Univ. of Montreal, Canada): *From salt-in-polymer to molten salts*
8:15	**Anton Habenschuss** (Oak Ridge National Lab., Tennessee): *The structure of LiI-poly(ethylene oxide) and LiI-diglyme solutions from scattering experiments*
9:00	Business Meeting (Future of the Conference, Election of New Vice-Chair)
9:30	Poster Session II

Friday, July 30

7:30-8:30 a.m.	Breakfast
8:30	Departure

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