

PREFACE

On 25–27 May 2000 a workshop entitled “Advances in Laser Heated Diamond Cell Techniques” was held at Argonne National Laboratory, Chicago in honor of Professor William A. Bassett for his pioneering contributions to this topic. This was the first workshop for advancing the laser heated diamond anvil cell technique, a crucial component of static ultrahigh pressure-temperature research. The meeting brought together 75 scientists in earth and materials science from eight countries. This collection of papers is a partial record of the contributions.

The meeting focused on discussions of the current state of the laser heated diamond anvil cell technique and research. Leading research groups reported new developments, problems, promising new approaches, and perspectives. Some important experimental details were discussed and debated in depth. The Workshop also presented a valuable educational opportunity for the student participants who comprised nearly one fourth of the attendees.

Eleven invited talks on the first day were followed by theme discussions and poster presentations on the second day. Topics included temperature measurement, high pressure melting, synchrotron applications, pressure determination, temperature control, chemical reactions, sample analysis, and phase relations at high pressures and temperatures. On the third day, 39 participants were invited to perform hands-on experiments using the laser heating system at the GeoSoilEnviroCARS sector of the Advanced Photon Source (APS).

Thanks to all who participated in the Workshop. We thank the members of the Program Committee for their help in making this a fruitful meeting. We are grateful to our sponsors, the National Science Foundation, the Center for High Pressure Research (CHiPR), and GeoSoilEnviroCARS. We also thank the editorial staff of the Review of Scientific Instruments for their efforts in reviewing and editing the submitted manuscripts. Finally, we express our gratitude to the staff of the Consortium for Advanced Radiation Sources (CARS), including Mark Rivers, Stephen Sutton, Nancy Lazarz, Mathew Newville, Dixie Franklin, and Joy Talsma, for their invaluable contributions to this successful meeting.

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