MAR10-2009-000635

Abstract for an Invited Paper
for the MAR10 Meeting of
the American Physical Society

**Liquid Water, the "Most Complex" Liquid: New Results in Bulk, Nanoconfined, and Biological Environments**[1]

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We will introduce some of the 63 anomalies of the most complex of liquids, water. We will demonstrate some recent progress in understanding these anomalies by combining information provided by recent experiments and simulations on water in bulk, nanoconfined, and biological environments. We will interpret evidence from recent experiments designed to test the hypothesis that liquid water may display "polymorphism" in that it can exist in two different phases—and discuss recent work on water's transport anomalies [1] as well as the unusual behavior of water in biological environments [2]. Finally, we will discuss how the general concept of liquid polymorphism [3] is proving useful in understanding anomalies in other liquids, such as silicon, silica, and carbon, as well as metallic glasses, which have in common that they are characterized by two characteristic length scales in their interactions. This work was supported by NSF Chemistry Division, and carried out in collaboration with a number of colleagues, chief among whom are C. A. Angell, M. C. Barbosa, M. C. Bellissent, L. Bosio, F. Bruni, S. V. Buldyrev, M. Canpolat, S. -H. Chen, P. G. Debenedetti, U. Essmann,G. Franzese, A. Geiger, N. Giovambattista, S. Han, P. Kumar, E. La Nave,G. Malescio, F. Mallamace, M. G. Mazza, O. Mishima, P. Netz, P. H. Poole, P. J. Rossky, R. Sadr,S. Sastry, A. Scala, F. Sciortino, A. Skibinsky, F. W. Starr, K. C. Stokely J. Teixeira, L. Xu, and Z. Yan.

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[1]This work was supported by NSF Chemistry Division.