

Preface

Having a special edition of *Thermochimica Acta* dedicated to energetic materials provides a forum for the energetic materials community to showcase the large array of scientific issues and approaches associated with energetic materials. The term “energetic material,” is generally applied to explosives, propellants and pyrotechnics. The science of energetic materials grew out of a need to predict, modify and tailor the behavior of energetic materials in the environments in which they are subjected to and must perform. Predicting their behavior, reliability and performance requires an understanding of the underlying causes of the chemical and physical processes that result from age and response to various stimuli.

The field of energetic materials is multi-disciplinary, using principles of chemistry, physics, materials science, polymer science, metallurgy, and hydrodynamics to probe and model the dynamic phenomena. Scientific issues associated with energetic materials include synthesis and formulation, compatibility, aging, reliability, and hazards analysis, as well as combustion, deflagration and shock dynamics. The timescales of the events range from years, in the case of aging, to femtoseconds, in the case of detonation. With such a span in time and spatial scales, often under adverse experimental environments, the experimentalist, theoretician and modeler face a variety of challenges as they attempt to identify, measure, quantify, correlate and model the dynamic processes and outcomes of energetic materials. Tracking developments in modern technology, much of the recent emphasis has shifted

from the macroscopic treatment of empirical observations to the microscopic and molecular viewpoint of chemical and physical dynamics.

This issue is dedicated to two men who played widely different but crucial roles in the field of energetic materials. Ray Rogers is responsible for the modern thermochemical approach to the study of energetic material stability. Today many labs examining energetic materials use DSC, modified Henkin, and cook-off testing because he proved the applicability of these techniques. Dick Miller, trained as a scientist, spent his career as a program officer. He fostered a cohesive energetic materials program and encouraged crucial collaborations among scientists from diverse subject areas. Many articles in this issue clearly show the successes of these collaborations.

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Jimmie C. Oxley*
Chemistry Department
University of Rhode Island
Kingston, RI 02881, USA

Leanna M.G. Minier
Sandia National Laboratories
Sandia National Labs in Albuquerque
New Mexico

*Corresponding author
E-mail address: joxley@chm.uri.edu (J.C. Oxley)