Towards Good Reporting Practice in Property Measurements

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Thermophysical and thermochemical property data for chemical compounds, mixtures, and materials are valuable for various applications beyond the research projects, where they have been obtained, such as chemical engineering, design of new products, correlation development, other scientific studies, and education. It should be noted that the majority of the thermophysical research projects are supported by public money. However, the present practices of reporting those results are frequently not efficient, and a significant part of the thermophysical data is lost for the community because of that. During the years of cooperation with major scientific journals in the area, the Thermodynamics Research Center at NIST has developed basic principles of property data reporting. Their implementation would significantly increase the availability and interpretability of property data and, hence, increase the efficiency of public money distributed for physical property research. Those principles cover identification of the materials, description of methods, representation of the experimental results and their uncertainties. Some of the recommendations are general and can be applied to a wide range of scientific reports/publications; some are specific to particular properties, substances, and methods. Those principles would constitute a “good reporting practice” in the field of thermophysical and thermochemical property research. Acceptance of those principles by funding agencies and scientific journals would make an appreciable positive impact in the area. The presentation will review applications of measured property data, typical reporting problems and their consequences, and illustrate the positive effect of the good reporting practice. The further work on developing recommendations covering certain aspects of planning and design of physical property research will be briefly mentioned.