What Should Be Measured?

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This author gave his first presentation at a Symposium on Thermophysical Properties at the ninth in 1985 which was also held in Boulder, Colorado [1]. During the 30 years since then, much guidance was published **how** measurements should be carried out and what techniques might be used. Needs for **what** should be measured derived from industrial and environmental developments such as supercritical extraction, alternative refrigerants, fossil and biofuels, and ionic liquids. These were all fit-for-purpose-and-funding campaigns but there has been little guidance for what should be measured to advance thermodynamics fundamentally. This presentation is intended to initiate a discussion of measurement strategies that are optimized for knowledge gain beyond the need of the day. Addressed will be questions such as:

Which pure fluids should be measured?

Which mixtures and at what compositions?

Which properties and combinations thereof?

Which domains of phase space need further exploration?

References

[1] A. Laesecke, K. Stephan, R. Krauss, Int. J. Thermophys. **7**(1986)4, 973-986.