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