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# Equilibrium critical phenomena in binary liquid mixtures

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### Abstract

We present a comprehensive and critical review of recent experimental studies of equilibrium critical phenomena in binary liquid mixtures, and show that binary liquid mixtures constitute ideal systems in which to attempt a detailed verification and evaluation of some predictions of the modern theories of critical phenomena. A section on general considerations includes brief descriptions of the recent theoretical predictions regarding critical phenomena. The next three sections (3, 4 and 5) contain detailed and critical surveys of experimental investigations of the coexistence curve, specific heat and thermal expansion in binary liquids. Some comparative discussions of critical phenomena in pure fluids and magnetic systems are included when felt necessary. In section 6, we survey studies of other equilibrium phenomena in binary liquids, especially dielectric constant measurements, interface phenomena and measurements of critical and correction amplitude ratios. Section 7 is devoted to the three major problems which plague experimental investigation of critical phenomena in fluids, namely gravity effects, temperature gradient effects and impurity effects. Some illustrative figures, a

temperature gradient effects and impurity effects. Some illustrative figures, a comprehensive set of tables summarising recent experimental data, and an extensive list of references have been provided. In many places in the review we attempt to point out directions in which further experimental and theoretical work would seem to be called for.



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