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Coexistence curve of a near-critical, eight-arm star polystyrene in methylcyclohexane MARK WELLONS, MARK LIGHTFOOT, D.T. JACOBS, Physics Department, The College of Wooster, Wooster OH 44691 — The coexistence curve of eight-arm star polystyrene in methylcyclohexane has been measured and used to determine the coexistence curve amplitude B. An automated measurement of the minimum deviated angle in each phase provides the refractive index and thus the composition in each phase. By exploring temperatures from a few milliKelvins to two Kelvin below the critical temperature, the shape of the coexistence curve is determined and compared to a simple power law of amplitude B and exponent β. The exponent should be independent of molecular weight while the amplitude should vary as a power-law in molecular weight. We report the results of one molecular weight (228,000) and compare them to published values for a smaller molecular weight (74,000) and to the results for a linear polystyrene in the same solvent. We acknowledge the support from the donors of the American Chemical Society Petroleum Research Fund.

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