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The thermogravitational technique at high pressures PEDRO URTEAGA, MOUNIR BOU-ALI, Mondragon Goi Eskola Politeknikoa, ABDELFATTAH ZEBIB, Rutgers University, PABLO BLANCO, Mondragon Goi Eskola Politeknikoa — Thermogravitational columns have been used successfully for over a decade to experimentally determine the thermal diffusion coefficients of binary and ternary mixtures at atmospheric pressure. A homogeneous mixture is placed in a vertical annulus. Species separation occurs due to side heating and thermal diffusion. Combined with buoyancy vertical concentration gradients are induced, measured, and the Soret coefficients deduced. In this work we extend this technique to measurements at the high pressures encountered in oil fields. A detailed description of the high pressure thermogravitational installation is presented. We first validate the new construction by conducting experiments with binary mixtures at atmospheric pressure and comparing our results with those in the literature. Dependence of the thermal diffusion coefficients of various binary mixtures of hydrocarbons and liquids on pressure is given.

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