# Equation of State of Binary Gaseous Mixtures at High Temperatures

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The knowledge of the equation of state is of paramount importance of the thermodynamics of fluids and their mixtures. Although many experimental studies have been carried out at low and room temperatures, the situation is rather different at high temperatures. In fact, in this range of temperature, the experimental studies are often scarce, especially for mixtures.

A comprehensive program of PVT measurements at high temperatures was developed recently at the Laboratory of Experimental Thermodynamics (Lisbon, Portugal) for simple gases and their binary mixtures. The experimental measurements have been carried out using an automated apparatus, based on the isochoric method, in the temperature range of 423.15 to 573.15 K and pressures up to 60 MPa. The apparatus was tested with pure nitrogen.

The study of the equation of state for the $N_2 + CH_4$, $Ar + CH_4$, and $Ar + N_2$ systems, in the considered range of pressure and temperature, will be discussed.