

## Vapor-Liquid Equilibria of Imidazolium Triflate Ionic Liquids with *n*-Alkyl Alcohols

Marcus Stuckenholz<sup>C, S</sup>

*Technische Thermodynamik, Universität Bremen, Bremen, Germany*  
*mstuckenholz@uni-bremen.de*

Pedro Carvalho

*CICECO, Departamento de Quimica, University of Aveiro, Aveiro, Portugal*

Johannes Kiefer

*Technische Thermodynamik, Universität Bremen, Bremen, Germany*

Joao Coutinho

*CICECO, Departamento de Quimica, University of Aveiro, Aveiro, Portugal*

Wolfram Schröer

*Institut für Anorganische und Physikalische Chemie, Universität Bremen, Bremen, Germany*

Bernd Rathke

*Technische Thermodynamik, Universität Bremen, Bremen, Germany*

A background knowledge of the phase behavior is a prerequisite for a basic understanding of thermophysical properties. A number of systematic studies focusing on liquid-liquid equilibria were published during the last two decades. However, detailed data of vapor-liquid equilibria (VLE) of e.g., binary mixtures of an ionic liquid (IL) and an organic solvent are scarce. Thus, the present paper will contribute to this topic. VLE of binary mixtures of 1-alkyl-3-methylimidazolium trifluoromethanesulfonate (C<sub>n</sub>mimTfO; *n* = 2, 4 or 6) ILs with short chained alcohols (C<sub>x</sub>OH; *x* = 1, 2, 3, 4) are investigated within this work. Therefore, static isobaric measurements of VLEs in a range of 0.5 bar ≤ *p* ≤ 1.0 bar and 320 K ≤ *T* ≤ 440 K using a microebulliometer have been performed. By applying a constant pressure inside the microebulliometer, steady state conditions are reached and are indicated by a constant temperature. The composition of liquid samples is analyzed utilizing the refractive index. Results are discussed in terms of phase diagrams and activity coefficients; NRTL and PC-SAFT calculations complement the data interpretation.