A thermodynamic study of glucose and related oligomers in aqueous solution: Vapor pressures and enthalpies of mixing

Vapor pressures above aqueous solutions of glucose and maltose at both 298.06 K and 317.99 K and vapor pressures above aqueous solutions of cellobiose, maltotriose, maltotetraose, and maltpentaose at 317.99 K have been measured. The excess enthalpies have been recorded for all of the above-mentioned systems at 318.15 K. A theoretical model is examined in which existing interaction parameters, calculated for the water + 1,2-ethanediol system by using a molecular mechanical approach, are incorporated into the UNIQUAC equation to describe the vapor pressures of the aforementioned series of saccharides in aqueous solution. This so-called transference principle is found to be of interest in furthering the discussion concerning the applicability of lattice-based models for solution theory.

General information
Publication status: Published
Organisations: Department of Chemistry, Roskilde University
Contributors: Cooke, S., Jonsdottir, S. O., Westh, P.
Pages: 1185-1192
Publication date: 2002
Peer-reviewed: Yes

Publication information
Journal: JOURNAL OF CHEMICAL AND ENGINEERING DATA
Volume: 47
Issue number: 5
ISSN (Print): 0021-9568
Ratings:
Scopus rating (2002): SJR 0.677 SNIP 1.038
Web of Science (2002): Indexed yes
Original language: English
Source: orbit
Source ID: 42939
Research output: Contribution to journal › Journal article – Annual report year: 2002 › Research › peer-review