

Abstract Submitted
for the DFD06 Meeting of
The American Physical Society

Osmotically driven pipe flows¹ EMMANUELLE RIO, RASMUS HANSEN, KAARE JENSEN, TOMAS BOHR, The Technical University of Denmark, CHRISTOPHE CLANET, IRPHE, Marseille — The mechanism for the transport of sugar in plants is a key issue for the understanding of their growth. Since the 1930'ies the dominant model has been the so-called Münch model (Münch 1930) where the transport of sugar in the phloem of plants is viewed as a purely passive hydrodynamical process. According to Münch, differences in osmotic pressure caused by differences in sugar concentration create a mean flow, transporting sugar from high concentration regions (e.g. leaves) to low concentration regions (e.g. new shoots or roots). We have performed experiments and numerical solutions for such flows under various conditions, to explore the nature of the ensuing rich fluid dynamics. Experiments are performed with solutions of dextran of various molecular weights and in channels of widths ranging from centimetric down to micrometric.

¹Supported by the Danish Natural Science Foundation

Tomas Bohr
The Technical University of Denmark

Date submitted: 04 Aug 2006

Electronic form version 1.4