

Abstract

A draw solute and an improved forward osmosis method

5 A draw solute for forward osmosis comprising a semi-interpenetrating (semi-IPN) hydrogel which comprises a thermally responsive polymer and a hydrophilic polymer, such that the semi-IPN hydrogel is capable of switching between a hydrophilic and hydrophobic state in response to changes in temperature is provided. Also provided is a draw solute comprising a hydrogel of a polyionic thermally responsive polymer,
10 wherein the hydrogel switches between a hydrophilic state to allow absorption of water osmosed from a feed solution and a hydrophobic state to allow release of the absorbed water in response to changes in temperature. There is also provided a forward osmosis method comprising: contacting a feed solution and the draw solute via a semi-permeable membrane, such that feed water in the feed solution passes
15 through the membrane by osmotic pressure and moves into the draw solute; and separating the water from the draw solute to form a purified water product.

(Figure 9)