Separation of xylose and glucose using an integrated membrane system for enzymatic cofactor regeneration and downstream purification

Mixtures of xylose, glucose and pyruvate were fed to a membrane bioreactor equipped with a charged NF membrane (NTR 7450). Value-added products were obtained in the reactor via enzymatic cofactor-dependent catalysis of glucose to gluconic acid and pyruvate to lactic acid, respectively. The initial cofactor (NADH) concentration could be decreased to 10% of the stoichiometric value (relative to glucose) without compromising process time and substrate conversion via i) efficient cofactor regeneration and ii) high retention of cofactor (R=0.98) in the membrane bioreactor. Furthermore, accumulation of xylose (R

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