



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁷ : B01D 61/52, 61/48, 61/58, C02F 1/469		A1	(11) International Publication Number: WO 00/07700
			(43) International Publication Date: 17 February 2000 (17.02.00)
(21) International Application Number: PCT/CA99/00594 (22) International Filing Date: 25 June 1999 (25.06.99) (30) Priority Data: 09/127,975 3 August 1998 (03.08.98) US (71) Applicant (for all designated States except US): E-CELL CORPORATION [CA/CA]; 52 Royal Road, Guelph, Ontario N1H 1G3 (CA). (72) Inventors; and (75) Inventors/Applicants (for US only): TESSIER, David, Florian [CA/CA]; 510-244 Willow Road, Guelph, Ontario N1H 6R5 (CA). KOSIR, Tom [CA/CA]; Apartment 703, 2435 Second Street, Burlington, Ontario L7R 1E5 (CA). SIVERNIS, Steve [CA/CA]; 98 Oak Knoll Drive, Hamilton, Ontario L8S 4C5 (CA). HUEHNERGARD, Mark, Phillip [CA/CA]; 21 Springdale Drive, Kitchener, Ontario N2K 1P8 (CA). GLEGG, Robert [CA/CA]; 250 Boland Crescent, Campbellville, Ontario L0P 1B0 (CA). (74) Agent: FORS, Arne, I.; Gowling, Strath & Henderson, Suite 4900, Commerce Court West, Toronto, Ontario M5L 1J3 (CA).		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published With international search report.	

(54) Title: METHOD FOR REDUCING SCALING IN ELECTRODEIONIZATION SYSTEMS

(57) Abstract

A method and apparatus for inhibiting scaling in an electrodeionization system (10) or in a combined reverse osmosis/electrodeionization system (62, 10) for water treatment and, more particularly, for increasing tolerance to hardness in the feed water to an electrodeionization unit (10) to inhibit precipitation of metal cations contained in the feed water and for increasing efficiency of the electrodeionization system. Water to be purified is passed through an electrodeionization unit (10) in which a concentrate stream recycling (12) through concentrating compartments (18) and anode and cathode compartments (20, 22) contains effective amounts of an antiscalant to inhibit precipitation of scale. One or more preliminary reverse osmosis units (62, 72, 74, 90, 100, 110, 120, 130, 140) in series with the electrodeionization unit (10) preferably receives a portion of the antiscalants in the concentrate stream (12, 44). The antiscalant in the water fed to the reverse osmosis unit (62) can be supplemented and adjusted. Electrolyte can be provided to the concentrate stream (44) of the electrodeionization unit from products of the reverse osmosis.

