



(51) International Patent Classification:

C02F 1/46 (2006.01) C02F 1/48 (2006.01)
C02F 1/42 (2006.01) C02F 5/00 (2006.01)

(21) International Application Number:

PCT/EP2013/003523

(22) International Filing Date:

21 November 2013 (21.11.2013)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

13/683,212 21 November 2012 (21.11.2012) US

(72) Inventors; and

(71) Applicants : AANENSEN, Ove T. [NO/NO]; Hylle-
bakken 2, 4622 Kristiansand (NO). VALAND, Dag Arild
[NO/DE]; Im Ellig 7, 53343 Wachtberg (DE).

(81) Designated States (unless otherwise indicated, for every

kind of national protection available): AE, AG, AL, AM,
AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY,
BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM,

DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT,
HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR,
KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME,
MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ,
OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA,
SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM,
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM,
ZW.

(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ,
UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ,
TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK,
EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV,
MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM,
TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,
KM, ML, MR, NE, SN, TD, TG).

Published:

— with international search report (Art. 21(3))

(54) Title: APPARATUS AND METHOD FOR WATER TREATMENT MAINLY BY SUBSTITUTION USING A DYNAMIC ELECTRIC FIELD

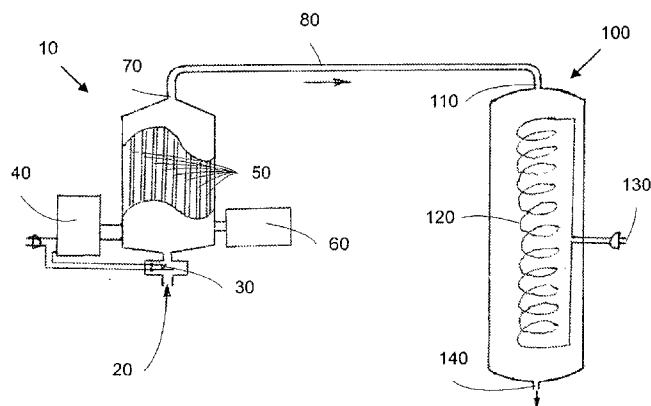


FIG. 1

(57) Abstract: An apparatus, method, process, and system for the treatment of a water stream are provided. Such apparatus, method, process, and system characterized by applying a voltage to a pair of electrodes to generate an electric field with such electric field applied across a water stream passing there between the pair of electrodes. At least one of the pair of electrodes comprises a metal, and one or more of a plurality of positively charged ions in the water stream are substituted with one or more positively charged ions of the metal. Additionally, one or more of a plurality of negatively charged ions may react with the one or more positively charged ions of the metal to form an ionic compound. One or more of any remaining of the plurality of positively charged ions may reaction with another one or more of the plurality of negatively charged ions.

