



(51) International Patent Classification:

C02F 1/46 (2023.01) C02F 1/74 (2023.01)
C02F 1/461 (2023.01) C02F 1/78 (2023.01)
C02F 1/72 (2023.01) C02F 3/20 (2023.01)
H01M 4/133 (2010.01) H01M 4/583 (2010.01)
H01M 4/50 (2010.01)

(21) International Application Number:

PCT/US2024/018795

(22) International Filing Date:

07 March 2024 (07.03.2024)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/488,783 07 March 2023 (07.03.2023) US

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(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, CV, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE, KG,

(54) Title: GENERATION OF HYDROXYL RADICALS IN AN ADVANCED OXIDATION REACTOR

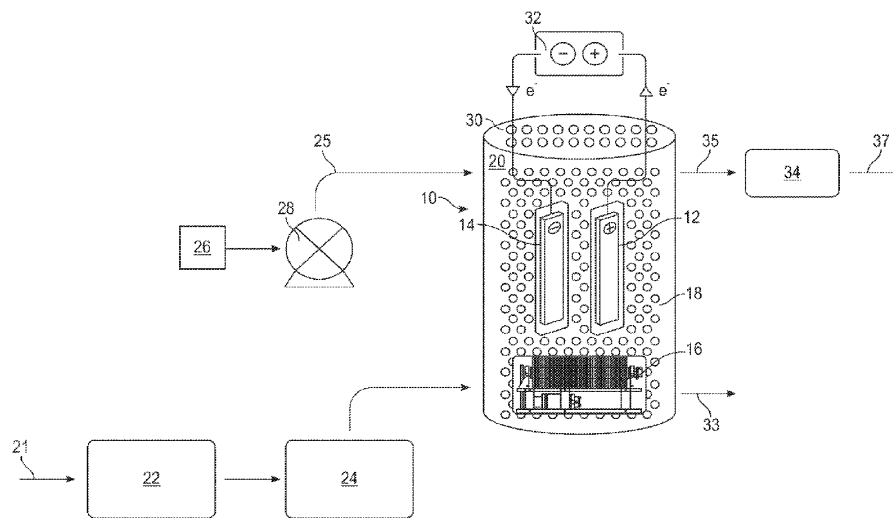


FIG. 1

(57) Abstract: Hydroxyl ($\cdot\text{OH}$) radicals are generated in an advanced oxidation reactor by introducing fine bubbles of oxygen (O_2) and/or ozone (O_3) with a diameter of less than $200\ \mu\text{m}$ into an aqueous saline solution in an advanced oxidation reactor vessel that contains an anode and a cathode. A voltage is delivered from a DC power generator to the anode and cathode to generate a potential difference between the anode and cathode, and the introduced oxygen or oxygen from the ozone is reacted in the fine bubbles in the aqueous saline solution to produce hydrogen peroxide (H_2O_2) at the interface of the aqueous saline solution with the cathode. Hydroxyl ($\cdot\text{OH}$) radicals are then generated from the hydrogen peroxide. In another method, where the bubbles may or may not be small, the anode comprises a manganese-based oxide. The hydroxyl radicals can be used to break down organic pollutants via oxidation.

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KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY,
MA, MD, MG, MK, MN, MU, 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, ST, SV, SY, TH,
TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS,
ZA, ZM, ZW.

(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, CV, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SC, SD, SL, ST, 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, ME, 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).

Declarations under Rule 4.17:

— *of inventorship (Rule 4.17(iv))*

Published:

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

(88) Date of publication of the international search report:

24 October 2024 (24.10.2024)