



(51) International Patent Classification:

C02F 1/32 (2023.01) C02F 1/02 (2023.01)
C02F 1/66 (2023.01) C02F 1/78 (2023.01)
C02F 1/72 (2023.01) C02F 103/06 (2006.01)

(21) International Application Number:

PCT/US2024/037823

(22) International Filing Date:

12 July 2024 (12.07.2024)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/513,782 14 July 2023 (14.07.2023) US
63/591,040 17 October 2023 (17.10.2023) US
63/635,938 18 April 2024 (18.04.2024) US

(71) Applicant: **CLAROS TECHNOLOGIES INC.** [US/US];
1600 Broadway Street NE, Suite 100, Minneapolis, Min-
nesota 55413 (US).

(72) Inventors: **LIU, Zekun**; 5401 94th Ave N, Unit 302,
Brooklyn Park, Minnesota 55443 (US). **HUANG, Cheng-
Hsin**; 1989 Knapp St., Apt 4, Saint Paul, Minnesota 55108
(US). **TIRADO, Joseph, Reuel, Levine**; 3030 Holmes Ave,
Apt S331, Minneapolis, Minnesota 55408 (US). **SMITH,**

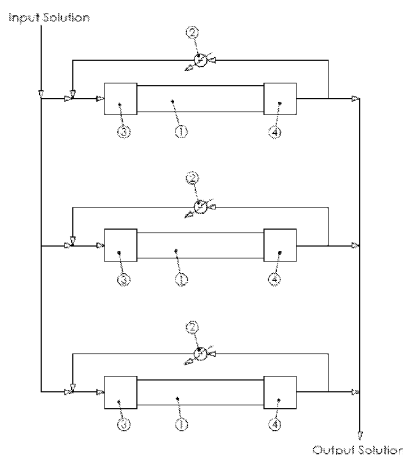
Terrance, P.; 8980 Highland Circle, Woodbury, Minneso-
ta 55125 (US). **PIRO, Mia, Christine**; 2210 Plymouth Rd,
Apt 106, Minnetonka, Minnesota 55305 (US).

(74) Agent: **DAWSON, Michelle** et al.; 9800 Shelard Parkway,
Suite 120, Minneapolis, Minnesota 55441 (US).

(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,
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,

(54) Title: METHODS AND SYSTEMS OF OXIDATIVE PRETREATMENT OF AQUEOUS SOLUTIONS CONTAINING PFAS



ITEM NO.	DESCRIPTION
1	Photochemical Reactor
2	Recycling/Cooling
3	Sensor Module
4	Ports For Sampling Or Adding Reagents Or Venting

Figure 1

(57) Abstract: Methods, systems and devices for PFAS destruction including oxidatively pretreating an aqueous foam fractionate solution including PFAS to form a pretreated solution by mixing the aqueous foam fractionate solution with a persulfate and an acid or a base to increase or decrease the pH and oxidizing the aqueous foam fractionate solution and then subjecting the pretreated solution to UV photolysis, such as by directing UV light onto the pretreated aqueous foam fractionate solution at 222nm, 254nm and/or 185 nm. Oxidizing the foam fraction may include subjecting the aqueous foam fractionate solution to an increased temperature and pressure for a period of time sufficient for thermal oxidation or subjecting the aqueous foam fractionate solution to ozone oxidation.

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))*