Table S1: experimental programm

batch reactor				
number	volume [l]	LED-power [W/m²]	volumensepz. Bestrahlungsleistung [kW/m³]	treatment time [min]
1.1	0.50	99.94	3.08	90
1.2	0.50	199.88	6.15	90
1.3	0.50	299.82	9.23	90
rotary body reactor				
number	flow rate [l/h]	LED-power [W/m²]	volumensepz. Bestrahlungsleistung [kW/m³]	hydraulic retention time [min]
2.1	25.10	87.83	4.29	59.76
2.2	23.40	197.89	9.67	64.10
2.3	23.50	303.72	14.84	63.83
flatcell reactor				
number	flow rate [l/h]	LED-power [W/m²]	volumensepz. Bestrahlungsleistung [kW/m³]	hydraulic retention time [min]
3.1	0.99	159.12	14.40	12.17
3.2	0.99	318.23	28.80	12.17
3.3	0.99	477.35	43.20	12.17
3.4	0.99	636.46	57.60	12.17

Table S2: Concentrations

laboratory batch

experiment variant	sample type	date	flow rate [l/h]	irradiation power [W/m²]	amisulpride	benzotriazole	candesartan	carbamazepine	diclofenac	gabapentin	1-methyl-benzotriazole	metoprolol
1.1	start A	12.02.2022	-	99.94	386	3200	2640	422	1830	4510	496	1090
1.1	start B	12.02.2022	-	99.94	382	3490	2730	428	2100	4530	513	1050
1.1	15 min A	12.02.2022	-	99.94	344	2650	2450	405	1560	4300	403	995
1.1	15 min B	12.02.2022	-	99.94	328	2460	2510	390	1490	4300	407	1020
1.1	30 min A	12.02.2022	-	99.94	306	1570	2160	352	1090	3910	312	870
1.1	30 min B	12.02.2022	-	99.94	302	1510	2150	290	1060	3960	310	885
1.1	45 min A	12.02.2022	-	99.94	252	1110	1920	276	774	3690	228	815
1.1	45 min B	12.02.2022	-	99.94	276	1070	1920	258	756	3630	230	770
1.1	60 min A	12.02.2022	-	99.94	250	692	1720	276	450	3470	162	680
1.1	60 min B	12.02.2022	-	99.94	246	702	1730	217	514	3490	162	691
1.1	75 min A	12.02.2022	-	99.94	210	456	1480	124	350	3010	109	552
1.1	75 min B	12.02.2022	-	99.94	210	416	1430	137	392	3020	114	556
1.1	90 min A	12.02.2022	-	99.94	176	318	1230	71	238	2700	80	490
1.1	90 min B	12.02.2022	-	99.94	193	278	1270	103	238	2750	78	485
1.2	start A	12.02.2022	-	199.88	308	3040	2710	430	1730	4860	503	1090
1.2	start B	12.02.2022	-	199.88	308	3250	2500	471	1770	4790	512	1100
1.2	15 min A	12.02.2022	-	199.88	308	2180	2210	281	1430	4130	380	850
1.2	15 min B	12.02.2022	-	199.88	306	2020	2140	214	1430	4000	378	835
1.2	30 min A	12.02.2022	-	199.88	276	1090	1820	138	702	3330	248	558
1.2	30 min B	12.02.2022	-	199.88	256	1100	1790	74	676	3080	255	560
1.2	45 min A	12.02.2022	-	199.88	226	542	1490	294	384	2460	161	389
1.2	45 min B	12.02.2022	-	199.88	222	532	1510	298	404	2400	149	400
1.2	60 min A	12.02.2022	-	199.88	174	662	1230	244	238	2130	99	359
1.2	60 min B	12.02.2022	-	199.88	186	646	1210	228	256	2140	101	363
1.2	75 min A	12.02.2022	-	199.88	144	310	912	174	110	1770	58	269
1.2	75 min B	12.02.2022	-	199.88	138	336	908	170	125	1740	59	234
1.2	90 min A	12.02.2022	-	199.88	108	172	758	131	78	1240	33	192
1.2	90 min B	12.02.2022	-	199.88	116	158	742	123	86	1170	32	176
1.3	start A	12.02.2022	-	299.82	364	4980	2790	267	2520	3590	522	810
1.3	start B	12.02.2022	-	299.82	368	4920	2780	248	2450	3510	515	795
1.3	15 min A	12.02.2022	-	299.82	239	1390	2180	117	1090	2860	314	589
1.3	15 min B	12.02.2022	-	299.82	236	1390	2080	131	1170	2820	320	575
1.3	30 min A	12.02.2022	-	299.82	210	886	1590	292	722	2330	200	471
1.3	30 min B	12.02.2022	-	299.82	208	892	1530	304	688	2150	202	467
1.3	45 min A	12.02.2022	-	299.82	166	500	1220	204	378	1760	113	359

1.3	45 min B	12.02.2022	-	299.82	169	456	1190	202	322	1770	114	303
1.3	60 min A	12.02.2022	-	299.82	124	222	758	137	174	1320	57	192
1.3	60 min B	12.02.2022	-	299.82	115	254	757	129	153	1260	58	198
1.3	75 min A	12.02.2022	-	299.82	80	82	532	77	71	880	27	117
1.3	75 min B	12.02.2022	-	299.82	80	89	536	76	63	865	27	120
1.3	90 min A	12.02.2022	-	299.82	60	23	384	49	n.b.	615	n.b.	78
1.3	90 min B	12.02.2022	-	299.82	64	24	390	51	n.b.	628	n.b.	68

semi technical RTK

experiment variant	sample type	date	flow rate [l/h]	irradiation power [W/m²]	amisulpride	benzotriazole	candesartan	carbamazepine	diclofenac	gabapentin	1-methyl-benzotriazole	metoprolol
2.1	influent A	12.01.2021	25.10	87.83	611	5250	2440	1490	3690	5440	1880	958
2.1	influent B	12.01.2021	25.10	87.83	672	5270	2500	1550	3740	5660	1970	928
2.1	cascade 2 A	12.01.2021	25.10	87.83	597	5270	2360	1450	2710	6190	2010	901
2.1	cascade 2 B	12.01.2021	25.10	87.83	617	5210	2410	1490	2650	6160	2160	950
2.1	cascade 4 A	12.01.2021	25.10	87.83	552	5270	2260	1400	2030	5700	1940	855
2.1	cascade 4 B	12.01.2021	25.10	87.83	582	5740	2340	1400	2020	5740	2010	884
2.1	cascade 6 A	12.01.2021	25.10	87.83	545	5450	2130	1330	1750	5470	1880	827
2.1	cascade 6 B	12.01.2021	25.10	87.83	506	5260	2150	1300	1610	5540	1900	850
2.1	cascade 8 A	12.01.2021	25.10	87.83	511	5030	2080	1280	1160	5300	1840	812
2.1	cascade 8 B	12.01.2021	25.10	87.83	486	5090	2020	1220	1070	4980	1730	750
2.1	cascade 10 A	12.01.2021	25.10	87.83	434	4250	1720	1080	811	4480	1540	629
2.1	cascade 10 B	12.01.2021	25.10	87.83	436	4510	1810	1150	862	4710	1660	673
2.1	cascade 12 A	12.01.2021	25.10	87.83	416	4220	1660	1040	668	4170	1440	601
2.1	cascade 12 B	12.01.2021	25.10	87.83	429	3380	1820	1110	741	3790	1530	617
2.2	influent A	12.01.2021	23.40	197.89	515	3080	2250	1280	3390	3910	1120	638
2.2	influent B	12.01.2021	23.40	197.89	517	3020	2260	1250	3120	3700	1140	620
2.2	cascade 2 A	12.01.2021	23.40	197.89	521	4890	2290	1210	2280	3350	1930	747
2.2	cascade 2 B	12.01.2021	23.40	197.89	541	5060	2270	1290	2090	3580	2010	767
2.2	cascade 4 A	12.01.2021	23.40	197.89	437	4380	1970	1060	1410	3120	1760	620
2.2	cascade 4 B	12.01.2021	23.40	197.89	469	4370	1990	1080	1400	3170	1740	627
2.2	cascade 6 A	12.01.2021	23.40	197.89	402	3910	1760	958	961	2950	1500	504
2.2	cascade 6 B	12.01.2021	23.40	197.89	385	3900	1770	1020	1030	2830	1570	572
2.2	cascade 8 A	12.01.2021	23.40	197.89	325	3220	1490	835	662	2450	1270	452
2.2	cascade 8 B	12.01.2021	23.40	197.89	320	3010	1600	894	619	2570	1300	480
2.2	cascade 10 A	12.01.2021	23.40	197.89	296	2890	1440	821	499	2550	1210	430
2.2	cascade 10 B	12.01.2021	23.40	197.89	276	2560	1410	821	526	2520	1220	421
2.2	cascade 12 A	12.01.2021	23.40	197.89	234	2010	1170	662	320	2160	952	338
2.2	cascade 12 B	12.01.2021	23.40	197.89	251	2300	1130	676	325	2170	973	334
2.3	influent A	14.01.2021	23.50	303.72	662	6090	2390	1540	2960	6730	2140	846

2.3	influent B	14.01.2021	23.50	303.72	643	4790	2360	1490	3050	6540	1990	823
2.3	cascade 2 A	14.01.2021	23.50	303.72	515	4810	1900	1190	1840	5340	1670	611
2.3	cascade 2 B	14.01.2021	23.50	303.72	571	4990	2010	1290	1670	5660	1840	677
2.3	cascade 4 A	14.01.2021	23.50	303.72	544	5430	1930	1070	1820	4720	1860	695
2.3	cascade 4 B	14.01.2021	23.50	303.72	547	5430	1870	1080	1920	4650	1840	671
2.3	cascade 6 A	14.01.2021	23.50	303.72	430	4160	1710	929	1270	3560	1490	610
2.3	cascade 6 B	14.01.2021	23.50	303.72	423	4320	1700	908	1250	3820	1410	599
2.3	cascade 8 A	14.01.2021	23.50	303.72	339	3500	1270	731	729	3370	1180	451
2.3	cascade 8 B	14.01.2021	23.50	303.72	338	3310	1290	753	726	3310	1210	500
2.3	cascade 10 A	14.01.2021	23.50	303.72	285	3110	1230	688	568	3130	1010	426
2.3	cascade 10 B	14.01.2021	23.50	303.72	289	2840	1190	668	555	3170	1060	419
2.3	cascade 12 A	14.01.2021	23.50	303.72	274	2150	1180	636	354	2890	852	336
2.3	cascade 12 B	14.01.2021	23.50	303.72	272	2490	1070	606	367	3010	988	356

laboratory flatcell

experiment variant	sample type	date	flow rate [l/h]	irradiation power [W/m²]	amisulpride	benzotriazole	candesartan	carbamazepine	diclofenac	gabapentin	1-methyl-benzotriazole	metoprolol
3	influent A	25.10.2019	-	-	2402	8355	3966	3046	2691	1198	1803	776
3	influent B	25.10.2019	-	-	2565	8512	3770	3245	2871	1295	1843	826
3	influent C	25.10.2019	-	-	2504	9266	3778	3357	2764	1317	1885	847
3.1	effluent A	25.10.2019	0.99	159.12	2075	2520	2195	2647	1370	1025	482	518
3.1	effluent B	25.10.2019	0.99	159.12	2232	2803	2224	2674	1426	1173	582	605
3.1	effluent C	25.10.2019	0.99	159.12	2132	2460	2253	2734	1292	1141	534	573
3.2	effluent A	25.10.2019	0.99	318.23	1716	1859	1707	2240	1198	1030	397	506
3.2	effluent B	25.10.2019	0.99	318.23	1824	1723	1690	2255	1057	906	376	431
3.2	effluent C	25.10.2019	0.99	318.23	1777	1746	1646	2205	1223	981	349	476
3.3	effluent A	25.10.2019	0.99	477.35	1654	1766	1491	2153	1021	1058	366	538
3.3	effluent B	25.10.2019	0.99	477.35	1695	1780	1599	2034	1191	1019	312	419
3.3	effluent C	25.10.2019	0.99	477.35	1646	1718	1528	2113	1058	992	294	447
3.4	effluent A	25.10.2019	0.99	636.46	1708	1770	1688	2175	1046	887	354	413
3.4	effluent B	25.10.2019	0.99	636.46	1518	1762	1557	2122	1072	833	340	378
3.4	effluent C	25.10.2019	0.99	636.46	1624	1607	1462	1994	1095	848	297	418

Table S3: Kinetics

laboratory batch

			amisulpride		benzotriazole		candesartan		carbamazepine		diclofenac		gabapentin		1-methylbenzotriazole		metoprolol	
experiment variant	flow rate [l/h]	irradiation power [W/m²]	half time [min]	R^2 [-]	half time [min]	R^2 [-]	half time [min]	R^2 [-]	half time [min]	R^2 [-]	half time [min]	R^2 [-]	half time [min]	R^2 [-]	half time [min]	R^2 [-]	half time [min]	R^2 [-]
1.1	-	99.94	87.07879153	0.99487	27.74808569	0.99002	88.41163017	0.98779			32.3749267	0.99246	136.7154202	0.97444	37.8355448	0.98959	88.2990039	0.9677
1.2	-	199.88	77.79429636	0.90241	21.59337011	0.98357	53.0740567	0.99474			23.70544393	0.95883	49.08974367	0.99234	27.1396703	0.98904	34.1115738	0.9907
1.3	-	299.82	35.47324363	0.97603	9.848638542	0.98366	34.11157385	0.99378			15.00968342	0.99478	40.82138873	0.98993	20.2674614	0.99475	31.7084712	0.98331

semi technical RTK

			amisulpride		benzotriazole		candesartan		carbamazepine		diclofenac		gabapentin		1-methylbenzotriazole		metoprolol	
experiment variant	flow rate [l/h]	irradiation power [W/m²]	half time [min]	R^2 [-]	half time [min]	R^2 [-]	half time [min]	R^2 [-]	half time [min]	R^2 [-]	half time [min]	R^2 [-]	half time [min]	R^2 [-]	half time [min]	R^2 [-]	half time [min]	R^2 [-]
2.1	25.10	87.83	97.85704255	0.98293	137.648217	0.71232	115.8493134	0.94808	117.2452218	0.97925	26.50790286	0.99136	96.49207633	0.95267	116.595826	0.96861	96.0881864	0.9291
2.2	23.40	197.89	43.86916722	0.99796	45.40055808	0.98296	53.60174383	0.99167	58.07288971	0.98039	17.46504236	0.99602	75.35256372	0.97006	51.827793	0.9876	43.2948047	0.98833
2.3	23.50	303.72	52.42159144	0.91609	50.11471444	0.86395	66.31831211	0.91337	49.02087967	0.98759	28.25258897	0.86777	49.84668829	0.93654	54.9890918	0.98636	48.1915707	0.92438

laboratory flatcell

			amisulpride		benzotriazole		candesartan		carbamazepine		diclofenac		gabapentin		1-methylbenzotriazole		metoprolol	
experiment variant	flow rate [l/h]	irradiation power [W/m²]	half time [min]	R^2 [-]	half time [min]	R^2 [-]	half time [min]	R^2 [-]	half time [min]	R^2 [-]	half time [min]	R^2 [-]	half time [min]	R^2 [-]	half time [min]	R^2 [-]	half time [min]	R^2 [-]
3.1	0.99	159.12	56.71	-	6.97	-	15.47	-	46.76	-	11.86	-	63.96	-	6.79	-	23.00	-
3.2	0.99	318.23	24.81	-	5.31	-	10.22	-	23.13	-	9.66	-	31.60	-	5.29	-	15.36	-
3.3	0.99	477.35	20.95	-	5.27	-	9.24	-	19.80	-	9.03	-	39.03	-	4.85	-	15.17	-
3.4	0.99	636.46	19.53	-	5.19	-	9.43	-	19.73	-	8.86	-	21.40	-	4.91	-	11.95	-