Electronic Supplementary Material (ESI) for Sustainable Energy & Fuels.

Route Towards High-Performance Microfluidic Fuel Cells: A Review

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Table S1

Summary of the power density with various fuel/oxidant types, electrolyte pH, operating temperature and electrocatalysts.

Power density (mW cm^{-2})	Fuels & oxidants	Anolyte & catholyte	Temperature	Anode & cathode electrocatalysts	Ref.
35	V^{2+}/V^{3+} couples & VO_2^+/VO^{2+} couples	H_2SO_4 & H_2SO_4	Room temperature (RT)	Graphite rod	1
70	V^{2+}/V^{3+} couples & VO_2^+/VO^{2+} couples	H_2SO_4 & H_2SO_4	RT	Carbon paper	2
*2010	V^{2+}/V^{3+} couples & VO_2^+/VO^{2+} couples	H_2SO_4/H_2SO_4	RT	CNTs-decorated carbon paper	3
0.25	Dissolved H_2 & Dissolved O_2	KOH & H_2SO_4	RT	Pt	4
110	H_2 & O_2	***Single KOH electrolyte	RT	Pt/C	5
191	H_2 & O_2	***Single H_2SO_4 electrolyte	RT	Pt/C	6

145	H_2 & O_2	KOH & H_2SO_4	RT	Pt-Ru	7
177.6	H_2 & O_2	***Single H_2SO_4	RT	Pt & Pt_3Co-Mo	8
795	H_2 & Br_2	***Single HBr electrolyte	RT	Pt & Graphite	9
0.18	HCOOH & Dissolved O_2	H_2SO_4 & H_2SO_4	RT	Pt	10
3.3	HCOOH & Dissolved O_2	H_2SO_4 & H_2SO_4	RT	Pd/MWCNTs & Pd/C	11
2.2	HCOOH & $KMnO_4$	H_2SO_4 & H_2SO_4	RT	Pt	12
26	HCOOH & $KMnO_4$	H_2SO_4 & H_2SO_4	RT	Pd & Graphite	13
26	HCOOH & Air	H_2SO_4/H_2SO_4	RT	Pd & Pt	14
30	HCOOH & H_2O_2	K_2HPO_4 & K_2HPO_4	RT	Pd & Pt	15
42	HCOOH & Forced O_2	H_2SO_4 & H_2SO_4	RT	Pd & Pt	16
52	HCOOH & NaOCl	NaOH & NaOH	RT	Pd & Au	17
63	HCOOH & Air	H_2SO_4/H_2SO_4	RT	Pd-PdO/ordered mesoporous carbon & Pd/C	18
**75	HCOOK & Air	***Single KOH electrolyte	60 ℃	Pd/C & Pt/C	19
5.7	Methanol & H_2O_2	H_2SO_4 & H_2SO_4	RT	Pt/CNTs	20
12	Methanol & Dissolved O_2	KOH & H_2SO_4	RT	Pt-Ru & Pt	21
11.8	Methanol & Air	H_2SO_4 & H_2SO_4	RT	Pt-Ru & Pt	22
17.2	Methanol & Air	KOH & KOH	RT	Pt-Ru & Pt	23
21.1	Methanol & Air	KOH & KOH	RT	Ru@Pt-GO/CNTs & Pt/C	24

55.4	Feed methanol & Air	***Single KOH electrolyte	RT	Pt-Ru & Pt/C	25
90	Methanol & Air	CF_3SO_3H	70 ℃	Pt-Ru & Pt/C	26
1.9	Ethanol & Air	H_2SO_4 & H_2SO_4	RT	Pt-Ru & Pt	22
12.1	Ethanol & Air	KOH & KOH	RT	Pt-Ru & Pt	22
14.5	Ethanol & Air	KOH & KOH	RT	Pd-Ag/MWCNT & Pt/C	27
*25.75	Ethanol & Air	KOH & KOH	RT	Cu@Pd/C & Pt/C	28
>100	Ethanol & Air	***Single KOH electrolyte	75 ℃	$MnCoNiO_4$/N-MWCNT & Pt-Ru/C	29
*14.44	Ethylene glycol & Air	KOH & H_2SO_4	RT	Pd nanocubes/C & Pt/C	30
62.8	Ethylene glycol & Dissolved O_2	KOH & KOH	RT	Pd_{52}–Ni_{48} & Pt/C	31
*108	Ethylene glycol & Dissolved O_2 + H_2O_2	KOH & H_2SO_4	RT	Pd-NiO/C & Pt/C	32
>80	Ethylene glycol & Air	***Single KOH electrolyte	75 ℃	$NiCo_2O_4$/N-graphene & PtRu/C	29
0.7	Glycerol & Dissolved O_2	KOH & KOH	RT	Pd/MWCNT & Pt/C	33
*23	Glycerol & Air + dissolved O_2	KOH & KOH	RT	Cu@Pd/C & Pt/C	34
*39.5	Glycerol & Air	KOH & H_2SO_4	RT	Pt/C	35
*53.6	Glycerol & Dissolved O_2	KOH & H_2SO_4	RT	Fe/Pt/C & Fe/Pt/C	35
>70	Glycerol & Air	***Single KOH electrolyte	75 ℃	$NiCo_2O_4$/N-graphene & PtRu/C	29
*193.0	Glycerol & NaClO	KOH & H_2SO_4	RT	Pt/C	36

20	Isopropanol & O_2	***Single KOH electrolyte	25 ℃	PtRu/C & $MnNiCoO_4$/MWCNT	37
55	Isopropanol & O_2	***Single KOH electrolyte	80 ℃	PtRu/C & $MnNiCoO_4$/MWCNT	37
1.55	H_2O_2 & H_2O_2	***Single HCl electrolyte	RT	Nickel & Prussian Blue	38
23	H_2O_2 & H_2O_2	NaOH & H_2SO_4	RT	Pt	39
80	Hydrazine & Air	H_2SO_4 & H_2SO_4	RT	Pt/C	22
**3.28	Hydrazine & Air	NaOH & NaOH	RT	Ag-Ni/MWCNT & Fe-PANI	40
8.47	$NaBH_4$ & Air	KOH & KOH	40 ℃	Pt/C	41
24.09	$NaBH_4$ & Air	KOH & KOH	70 ℃	Pt/C	41
101	$NaBH_4$ & Air	KOH & KOH	RT	Pt	22
165	$NaBH_4$ & O_2	***Single NaOH electrolyte	20 ℃	CoB/Ni-foam & $LaCoO_3$	42
205	$NaBH_4$ & O_2	***Single NaOH electrolyte	40 ℃	CoB/Ni-foam & $LaCoO_3$	42
250	$NaBH_4$ & $Ce(NO_3)_6(NH_4)_2$	KOH & HNO_3	RT	Pt	43
10.94	Ammonia & Air	KOH & H_2SO_4	RT	$Ni_{50}Cu_{50}$/CNTs & Pt/C	44
3.9	Urea & Air	KOH & H_2SO_4	20 ℃	Ni/CNT@Sponge & Pt/C	45
6.6	Urea & Air	KOH & H_2SO_4	45 ℃	Ni/CNT@Sponge & Pt/C	45
0.52	Glucose & Dissolved O_2	KOH & KOH	RT	Au/C & Pt/C	46
1.6	Glucose & Air	KOH & KOH	RT	Au-Ag/MWCNT & Pt/C	47

*The values of power density are normalized to the cross–sectional area.

**The values of power density are normalized to catalyst loading.

***The single electrolyte stream is mainly employed for MMFC with selective electrocatalyst, or H_2/O_2 as fuel/oxidant.

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