Supporting Information for

High-Performance Five-Ring-Fused Organic Semiconductors for Field-Effect Transistors

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Table S1. The source data of Fig. 1 in the main text.

Fig. 1a

Name	Method	Morphology	Type	Mobility ($cm^2\ V^{-1}\ s^{-1}$)	On/off	Reference
Anthracene	Physical Vapor Deposition	Single Crystal	p	0.02	-	1
Tetracene	Physical Vapor Deposition	Single Crystal	p	0.15	2×10^7	2
	Physical Vapor Deposition	Single Crystal	p	0.4	-	3
	Physical Vapor Deposition	**Single Crystal**	**p**	**1**	**-**	**4**
	Physical Vapor Deposition	**Single Crystal**	**p**	**1.3**	**-**	**5**
	Physical Vapor Deposition	Single Crystal	p	0.2	2.7×10^4	6
	Physical Vapor Deposition	Single Crystal	p	0.1	10^9	7
	Physical Vapor Deposition	Single Crystal	p	0.5	5×10^5	8
	Physical Vapor Deposition	Single Crystal	p	0.03	-	9
	Physical Vapor Deposition	Single Crystal	p	5×10^{-4}	-	10
	Physical Vapor Deposition	Single Crystal	p	6×10^{-5}	-	11
	Physical Vapor Deposition	**Single Crystal**	**p**	**2.4**	**10^5-10^8**	**12**
	Physical Vapor Deposition	Single Crystal	Ambi polar	0.16 (p) 0.037 (n)	-	13
	Physical Vapor Deposition	**Single Crystal**	**p**	**1.6**	**-**	**14**
	Physical Vapor Deposition	Single Crystal	p	0.016	-	15
	Physical Vapor Deposition	Single Crystal	p	0.56	10^5	16
	Physical Vapor Deposition	Single Crystal	p	6.38×10^{-4}	-	17
	Vapor-Liquid-Solid	Single Crystal	p	0.3	-	18
Pentacene	Physical Vapor Deposition	Single Crystal	p	0.3	5×10^6	19
	Physical Vapor Deposition	Single Crystal	p	0.3	-	2
	Physical Vapor Deposition	Single Crystal	p	0.5	-	20
	Physical Vapor Deposition	**Single Crystal**	**p**	**1.4**	**-**	**5**
	Physical Vapor Deposition	**Single Crystal**	**p**	**35**	**-**	**21**
	Physical Vapor Deposition	Single Crystal	p	0.4	-	22
	Physical Vapor Deposition	Single Crystal	p	0.2	-	23
	Physical Vapor Deposition	Single Crystal	p	0.2	-	6
	Vacuum Deposition	**Single Grain**	**p**	**2**	**-**	**24**
	Physical Vapor Deposition	**Single Crystal**	**p**	**2.2**	**-**	**25**
	Physical Vapor Deposition	Single Crystal	p	0.3	10^5	26
	Physical Vapor Deposition	**Single Crystal**	**p**	**2.3**	**-**	**27**
	Physical Vapor Deposition	**Single Crystal**	**p**	**1.9**	**10^3-10^4**	**12**
	Physical Vapor Deposition	Single Crystal	p	0.35	-	9
	Vacuum Deposition	**Single Grain**	**p**	**1.1**	**10^5**	**28**
	Physical Vapor Deposition	**Single Crystal**	**p**	**40**	**-**	**29**
	Physical Vapor Deposition	Single Crystal	p	0.4	10^6	30
	Physical Vapor Deposition	Single Crystal	Ambi polar	0.29 (p) 0.35 (n)	-	31
	Drop Cast	Single Crystal	p	0.6	-	32

	Vacuum Deposition	Single Grain	p	0.39	10^6	[33]
	Physical Vapor Deposition	Single Crystal	p	0.7	-	[34]
	Physical Vapor Deposition	**Single Crystal**	**p**	**2**	**-**	**[35]**
	Flux-Mediated Vacuum Deposition	**Single Crystal**	**p**	**5**	**10^4**	**[36]**
Hexacene	**Physical Vapor Deposition**	**Single Crystal**	**p**	**4.28 (max)** 0.88 (ave)	**10^5 (max)** 10^4-10^6 (ave)	**[37]**

Fig. 1b

Name	Method	Morphology	Type	Mobility ($cm^2\ V^{-1}\ s^{-1}$)	On/off	Reference
phenanthrene	Bridgeman	Single Crystal	p	0.21	-	[38]
	Bridgeman	Single Crystal	p	0.15	-	[38]
	Bridgeman	Single Crystal	p	0.63	-	[38]
	Bridgeman	Single Crystal	p	0.52	-	[38]
	-	Single Crystal	p	0.26	-	[39]
	-	**Single Crystal**	**p**	**2.86**	**-**	**[39]**
Chrysene	-	Single Crystal	p	0.23	-	[39]
	-	Single Crystal	p	2.3	-	[39]
Picene	**Physical Vapor Deposition**	**Single Crystal**	**p**	**1.3**	**~10^4**	**[40]**
	Physical Vapor Deposition	**Single Crystal**	**p**	**9**	**-**	**[41]**
	-	Single Crystal	p	0.64	-	[39]
	-	**Single Crystal**	**p**	**4.74**	**-**	**[39]**
[6]phenacene	-	Single Crystal	p	0.56	-	[42]

Table S2. The performance statistics of five-ring-fused organic molecules listed in Fig. 3 of the main text.

Number	Method	Morphology	Type	Mobility ($cm^2 V^{-1} s^{-1}$)	On/off	Reference
001	-	-	-	-	-	[43]
002	Vacuum Deposition	Thin Films	p	1.2×10^{-2}	10^3	[44]
003	-	-	-	-	-	[45]
004	-	-	p[a]	1.1×10^{-4}	10^5	[46]
005	Solvent Exchange	Single Crystal	Ambipolar	7×10^{-4} (p); 3×10^{-3} (n)		[47]
006	**Drop Cast**	**Single Crystals (α Phase)**	**p**	**1.44**	**$>10^3$**	[48]
	Drop Cast	Single Crystals (β Phase)	p	0.28	$>10^3$	[48]
007	Spin Coating	Thin Films	n	0.10-0.16	10^7-10^8	[49]
	Vacuum Deposition	Thin Films	n	0.1	10^7	[50]
	Vacuum Deposition	Thin Films	n	3×10^{-3} (vac) 3×10^{-3} (air)	10^3 (vac) 10^1 (air)	[50]
	Vacuum Deposition	Thin Films	n	6×10^{-3} (vac) 7×10^{-3} (air)	10^4 (vac) 10^4 (air)	[50]
	Spin Coating	Thin Films	n	0.16	10^8	[51]
	Vacuum Deposition	Thin Films	n	0.16	10^7	[51]
008	Solution-Shearing	Thin Films	Ambipolar	0.01±0.002 (p) 0.13±0.012 (n)	1.1×10^3 (p) 1.0×10^4 (n)	[52]
009	Spin Coating	Thin Films	Ambipolar	1×10^{-4} (p) 1×10^{-3} (n)	10^5 (p) 10^4 (n)	[51]
010	-	-	-	-	-	[51]
011	Spin Coating	Thin Films	n	1×10^{-3}	10^4	[51]
012	Vacuum Deposition	Thin Films	-	-	-	[53]
013	Vacuum Deposition	Thin Films	n	0.17	2×10^7	[53]
	-	-	n	6.6×10^{-2}	2×10^4	[53]
	OMBD	Thin Films	n	0.14	1.2×10^5	[54]
014	Vacuum Deposition	Thin Films	n	1.8×10^{-2}	2×10^7	[53]
015	Vacuum Deposition	Thin Films	n	9.9×10^{-3}	4×10^6	[53]
016	Vacuum Deposition	Thin Films	-	$<10^{-7}$	-	[55]
017	Vacuum Deposition	Thin Films	Ambipolar	0.71 (p) 0.65 (n)	10^5 (p) 10^4 (n)	[55]
018	**Vacuum Deposition**	**Thin Films**	**p**	**1.03**	**10^5**	**[55]**
019	Solution-Shearing	Thin Films	Ambipolar	0.02 (p) 0.12 (n)	2.1×10^2 (p) 8.5×10^5 (n)	[56]
	Droplet-Pinned Crystallization	Thin Films	Ambipolar	2.5×10^{-4} (p) 7.7×10^{-4} (n)	5.3×10^4 (p) 3.1×10^2 (n)	[56]
	Drop Cast	Thin Films	Ambipolar	8.2×10^{-4} (p)	1.5×10^2 (p)	[56]

				1.6×10^{-3} (n)	2.8×10^{6} (n)	
020	Spin Coating	Thin Films	Ambipolar	2×10^{-4} (p) 2×10^{-4} (n)	10^{4} (p) 10^{4} (n)	[51]
	Vacuum Deposition	Thin Films	Ambipolar	6×10^{-4} (p) 1×10^{-2} (n)	10^{7} (p) 10^{6} (n)	[51]
021	Solution-Shearing	Thin Films	Ambipolar	0.01±0.001 (p) 0.02±0.002 (n)	2.2×10^{6} (p); 1.4×10^{5} (n)	[52]
	Solution-Shearing	Thin Films	Ambipolar	3.3×10^{-4} (p) 0.04 (n)	1.2×10^{5} (p) 2.2×10^{5} (n)	[56]
	Droplet-Pinned Crystallization	Thin Films	Ambipolar	2.7×10^{-4} (p) 0.013 (n)	4.2×10^{4} (p) 1.2×10^{4} (n)	[56]
	Drop Cast	Thin Films	Ambipolar	5.3×10^{-7} (p) 1.5×10^{-4} (n)	5.9×10^{3} (p) 6.7×10^{5} (n)	[56]
022	Spin Coating	Thin Films	p	1×10^{-4}	10^{4}	[51]
023	OMBD	Thin Films	n	0.07	5.4×10^{5}	[54]
024	OMBD	Thin Films	n	0.16	6.8×10^{5}	[54]
	OMBD	Thin Films	n	0.05 (NH_2-) 0.18 (PS-) 0.02 (CH_3-) 1.8×10^{-3} (CF_3-)	5.1×10^{4} (NH_2-) 4.4×10^{5} (PS-) 5.8×10^{4} (CH_3-) 9×10^{4} (CF_3-)	[57]
025	Vacuum Deposition	Thin Films	n	2.93×10^{-5}	10^{5}	[58]
026	-	-	n	0.06	-	[59]
027	-	-	n	0.485	-	[59]
028	-	-	n	1.8×10^{-2}	-	[59]
	-	-	-	-	-	[48]
029	Spin Coating	Thin Films	-	-	-	[51]
030	Vacuum Deposition	Thin Films	Ambipolar	6×10^{-4} (p) 0.01 (n)	10^{7} (p) 10^{6} (n)	[51]
	Spin Coating	Thin Films	p	1×10^{-3}	10^{4}	[51]
031	Vacuum Deposition	Thin Films	p	0.32±0.04	2.5×10^{4}	[60, 61]
032	-	-	Ambipolar	5.8 (p)[a] 0.2 (n)[a]	-	[60]
033	-	-	Ambipolar	2.9 (p)[a] 0.6 (n)[a]	-	[60]
034	-	Thin Films	n	1.02×10^{-3}	6.3×10^{5}	[62]
035	-	Thin Films	n	4.6×10^{-6}	10^{3}-10^{4}	[62]
036	-	-	-	-	-	[62]

a- Means calculated value

Table S3. The performance statistics of five-ring-fused organic molecules listed in Fig. 5 of the main text.

Number	Method	Morphology	Type	Mobility ($cm^2\ V^{-1}\ s^{-1}$)	On/off Ratio	Reference
037	-	-	-	-	-	[51]
038	-	-	-	-	-	[51]
039	-	-	-	-	-	[51]
040	Spin Coating	Thin Films	p	1×10^{-3}	10^4	[51]
041	-	-	-	-	-	[51]
042	Spin Coating	Thin Films	Ambipolar	2×10^{-4} (p) 2×10^{-4} (n)	10^4 (p) 10^4 (n)	[51]
043	-	-	-	-	-	[51]
044	-	-	-	-	-	[51]
045	-	-	-	-	-	[51]
046	Spin Coating	Thin Films	p	1×10^{-2}	10^5	[51]
047	Spin Coating	Thin Films	p	2.5×10^{-5} (Linear) 1.5×10^{-5} (Saturated)	-	[63]
			p	3.5×10^{-6} (Linear) 4.6×10^{-6} (Saturated)	-	[63]
048	Spin Coating	Thin Films	p	3.5×10^{-5} (Linear) 1.1×10^{-4} (Saturated)	-	[63]
			p	3.5×10^{-6} (Linear) 1.0×10^{-5} (Saturated)	-	[63]
049	Spin Coating	Thin Films	p	0.2 (TG); 0.09 (BG)	-	[64]
050	Spin Coating	Thin Films	p	0.67	10^7	[65]
051	Drop Cast	Thin Films	p	$>10^{-2}$ [a]	-	[66]
052	Spin Coating	Thin Films	p	5×10^{-3}	10^5	[67]
053	Spin Coating	Thin Films	p	2×10^{-2}	10^5	[67]
054	Spin Coating	Thin Films	p	2×10^{-2}	10^5	[67]
055	Spin Coating	Thin Films	p	4×10^{-2}	10^6	[67]

a- Time-of-flight measurement

Table S4. The performance statistics of five-ring-fused organic molecules listed in Fig. 6 of the main text.

Number	Method	Morphology	Type	Mobility ($cm^2 V^{-1} s^{-1}$)	On/off	Reference
056	Vacuum Deposition	Thin Films	p	0.31±0.11	1.3×10^6	68
	Vacuum Deposition	Thin Films	p	0.245	10^6	69
	Vacuum Deposition	Thin Films	p	0.31	-	70
	Vacuum Deposition	Thin Films	p	0.55	10^5	71
057	-	-	-	-	-	72
058	Vacuum Deposition	Thin Films	p	0.79±0.05	2×10^7	73
059	Vacuum Deposition	Thin Films	p	$<10^{-4}$	-	72
060	Vacuum Deposition	Thin Films	p	10^{-4}	-	74
	Vacuum Deposition	Thin Films	p	0.298±0.06	2×10^7	72
061	Vacuum Deposition	Thin Films	p	$<10^{-4}$	-	72
062	Vacuum Deposition	Thin Films	p	0.23±0.04	5×10^7	73
063	Vacuum Deposition	Thin Films	p	$<10^{-4}$	-	72
064	Vacuum Deposition	Thin Films	p	0.064	10^6	69
065	Vacuum Deposition	Thin Films	p	0.801±0.25	10^5	75
066	Vacuum Deposition	Thin Films	p	10^{-4}	-	75
067	Vacuum Deposition	Thin Films	p	0.006±0.001	2×10^4	75
068	Vacuum Deposition	Thin Films	Ambi polar	0.0569±0.007 (p) 0.216±0.08 (n)	5×10^2 (p) 3×10^5 (n)	74
069	Vacuum Deposition	Thin Films	Ambi polar	0.225±0.05 (p) 0.561±0.1 (n)	4×10^2 (p) 10^5 (n)	76
	-	-	Ambi polar	0.63-4.79 (p)[a] 0.48-1.46 (n)[a]	-	77
070	Vacuum Deposition	Thin Films	p	0.241±0.02	3×10^6	72
071	Vacuum Deposition	Thin Films	p	0.293±0.09	10^4	72
072	Vacuum Deposition	Thin Films	p	0.41	10^5	78, 79
073	**Self-Assembly**	**Single Crystals**	**p**	**1.66**	**10^6**	**80**
074	**Self-Assembly**	**Single Crystals**	**p**	**1.66**	**10^6**	**80**
075	Vacuum Deposition	Thin Films	p	2.6×10^{-3}	-	81
076	Vacuum Deposition	Thin Films	p	0.012	10^4	81
077	Vacuum Deposition	Thin Films	p	1.8×10^{-5}	-	81
078	Vacuum Deposition	Thin Films	p	7×10^{-3}	10^6	81
079	**Vacuum Deposition**	**Polycrystals**	**p**	**1.1**	**-**	**82**
	Solution	**Single Crystals**	**p**	**1.5**	**-**	**82**
080	Vacuum Deposition	Polycrystals	p	0.45	-	82
	Solution	**Single Crystals**	**p**	**1.0**	**-**	**82**
081	**Vacuum Deposition**	**Polycrystals**	**p**	**3.7**	**-**	**82**
	Solution	**Single Crystals**	**p**	**9.5**	**-**	**82**
	Vacuum Deposition	**Thin Films**	**p**	**1.2**	**2.5×10^6**	**83**
082	**Vacuum Deposition**	**Polycrystals**	**p**	**4.0**	**-**	**82**
	Solution	**Single Crystals**	**p**	**6.5**	**-**	**82**

083	**Physical Vapor Transport**	**Single Crystals**	**p**	**0.5-1.6**	**10^4**	**[84]**
084	**Drop Cast**	**Single Crystals**	**p**	**4.7**	**10^5**	**[85]**

a- Means calculated value

Table S5. The performance statistics of five-ring-fused organic molecules listed in Fig. 8 of the main text.

Number	Method	Morphology	Type	Mobility ($cm^2\ V^{-1}\ s^{-1}$)	On/off	Reference
085	Vacuum Deposition	Thin Films	p	0.012	10^5	86
	Vacuum Deposition	Thin Films	p	0.12 (*anti*-)	-	87
	Vacuum Deposition	Thin Films	p	0.14	10^4	71
086	Vacuum Deposition	Thin Films	p	0.02 (*syn*-)	-	87
087	Vacuum Deposition	Thin Films	p	0.3	10^3	86
	Vacuum Deposition	Thin Films	p	0.084 (*syn*-) 0.41 (*anti*-)	-	88
088	**Vacuum Deposition**	**Thin Films**	**p**	**1.3**	**3.5×10^6**	**89**
089	Vacuum Deposition	Thin Films	p n	4.8×10^{-2} (p) 3.0×10^{-4} (n)	10^6 (p) 10^3 (n)	86
090	Vacuum Deposition	Thin Films	p	0.15±0.02	-	90
	Vacuum Deposition	Thin Films	p	0.01-0.02	-	91
091	Vacuum Deposition	Thin Films	p	0.14±0.02	-	90
092	Vacuum Deposition	Thin Films	p	0.06±0.01	-	90
093	**Physical Vapor Transport**	**Single Crystals**	**p**	**4.08**	**10^4-10^6**	92
094	Drop Cast	Thin Films	p	5×10^{-4}	10^3	93
095	Drop Cast	Thin Films	p	1×10^{-3}	10^2	93
096	Drop Cast	Thin Films	p	1.5×10^{-3}	10^4	93
097	Drop Cast	Thin Films	p	0.013	10^4	94
	Spin Coating	Thin Films	p	0.12±0.02	10^4	95
098	Spread	Thin Films	p	-	-	96
099	**Spread**	**Thin Films**	**p**	**1.0**	**10^7**	**96**
	Spin Coating	Thin Films	p	0.11±0.09	2×10^3	97
	Lamination	Thin Films	p	0.19±0.06	-	98
	Spin Coating	Thin Films	p	0.1	-	99
	Spin Coating	Thin Films	p	-	-	100
	Drop Cast	Thin Films	p	0.1-0.4	10^5	101
	Spin Coating	Thin Films	p	0.47	10^6	102
	Drop Cast	Thin Films	p	0.04±0.011	3×10^6	103
	Spin Coating	**Thin Films**	**p**	**1.1**	**$>10^6$**	**104**
	Spin Coating	Thin Films	p	0.84	10^6	105
	Spin Coating	Thin Films	p	0.68±0.04	10^6	106
	Drop Cast	**Thin Films**	**p**	**1.3**	**10^9**	**107**
	Spin Coating	Thin Films	p	0.37±0.03	10^3-10^4	108
	Spin Coating	Thin Films	p	0.1-0.4	-	109
	Spin Coating	**Thin Films**	**p**	**1.38**	**10^7**	**110**
	Spin Coating	Thin Films	p	0.56	10^7	111
	Dip Coating	**Thin Films**	**p**	**1.82**	**-**	**112**
	Solvent-Assisted Crystallization	Thin Films	p	0.06±0.01 (α) 0.22±0.03 (β)	-	113

	Spin Coating	**Thin Films**	**p**	**1.3-1.6**	**-**	**114**
	Drop Cast	**Thin Films**	**p**	**2.1**	**10^7**	**115**
	Spin Coating	**Thin Films**	**p**	**1.32**	**>10^6**	**116**
	Spin Coating	Thin Films	p	0.80±0.07	1.46 x 10^6	117
	Spin Coating	**Thin Films**	**p**	**3.08**	**-**	**118**
	Spin Coating	Thin Films	p	1.65 x 10^{-3}	-	119
	Spin Coating	Thin Films	p	0.3	10^5	120
	Spin Coating	Thin Films	p	0.36	-	121
	Solvent Assisted Crystallization	Thin Films	p	0.11±0.02	-	122
	Vibration Assisted Crystallization	Thin Films	p	0.2±0.01	-	122
	Spin Coating	Thin Films	p	0.303±0.044	10^6	123
	Spin Coating	Thin Films	p	0.34	10^6	**124**
	Spin Coating	Thin Films	p	**0.29**	10^6	**125**
100	**Spin Coating**	**Thin Films**	**p**	**1.5**	**-**	**100**
	Spin Coating	**Thin Films**	**p**	**4.3±0.8**	**-**	**126**
	Spin Coating	Thin Films	p	0.1-0.2	-	127
	Spin Coating	Thin Films	p	0.4±0.1	-	128
	Physical Vapor Transport	**Single Crystals**	**p**	**6**	**10^8**	**129**
	Spin Coating	**Thin Films**	**p**	**1.5**	**-**	**130**
	Spin Coating	Thin Films	p	0.1-0.2	-	131
	Physical Vapor Transport	**Single Crystals**	**p**	**0.6 (250K) 1.4 (330K)**	**-**	**132**
	Spin Coating	Thin Films	p	0.1-0.2	-	133
	Drop Cast	Thin Films	p	0.002-0.029	-	134
	Spray	Thin Films	p	0.2	10^7	135
	Spin Coating	**Thin Films**	**p**	**2.4**	**-**	**136**
	Spin Coating	**Thin Films**	**p**	**2.47±0.3**	**-**	**137**
	Spin Coating	**Thin Films**	**p**	**>1**	**-**	**138**
	Dip Coating	**Thin Films**	**p**	**0.92-1.5**	**10^5**	**139**
	Physical Vapor Transport	**Single Crystals**	**p**	**1.01-1.07**	**10^6**	**140**
	Spin Coating	Thin Films	p	>0.1	-	141
	Spin Coating	Thin Films	p	0.3±0.052	1.3 x 10^7	142
	Solvent Assisted Crystallization	Thin Films	p	0.8±0.4	-	122
	Vibration Assisted Crystallization	**Thin Films**	**p**	**2.5±0.8**	**-**	**122**
	Spin Coating	**Thin Films**	**p**	**1-3**	**-**	**143**
	Inkjet Printing	Thin Films	p	0.4	-	144
	Spin Coating	Thin Films	p	0.09	-	145
	Spin Coating	**Thin Films**	**p**	**2-6**	**-**	**146**
	Spin Coating	Thin Films	p	0.52±0.22	>10^7	147
	Spin Coating	**Thin Films**	**p**	**1.5**	**1.2 x 10^5**	**148**
	Spin Coating	Thin Films	p	0.7	-	149

	Inkjet Printing	Thin Films	p	0.68±0.23	-	[150]
	Spin Coating	Thin Films	p	-	-	[151]
	Spin Coating	**Thin Films**	**p**	**1.5±0.7**	**-**	**[152]**
	Spray	**Thin Films**	**p**	**>1**	**-**	**[153]**
	Printing	Thin Films	p	0.07	10^7	[154]
	Spin Coating	Thin Films	p	0.07	10^7	[155]
	Drop Cast	Thin Films	p	-	-	[156]
	Spin Coating	Thin Films	p	-	-	[157]
	Coating	Thin Films	p	0.19±0.07	10^4	[158]
	Spin Coating	Thin Films	p	-	-	[159]
	Blade Coating	**Thin Films**	**p**	**3.6**	**-**	**[160]**
	Spray	**Thin Films**	**p**	**1.7**	**7.9×10^3**	**[161]**
	Spin Coating	**Thin Films**	**p**	**>2**	**-**	**[162]**
	Drop Cast	Thin Films	p	0.7	-	[163]
	Bar-Assisted Meniscus Shearing	Thin Films	p	0.04	-	[164]
	Spin Coating	**Thin Films**	**p**	**8**	**-**	**[165]**
	Inkjet Printing	Thin Films	p	0.2	-	[166]
	Spin Coating	**Thin Films**	**p**	**0.004-7.7**	**$\sim 10^4$**	**[167]**
	Spin Coating	Thin Films	p	0.34±0.01	10^7	[168]
	Coating	Thin Films	p	0.8	10^6	[169]
	Spin Coating	Thin Films	p	-	-	[170]
	Solution Shearing	**Thin Films**	**p**	**1.3**	**10^5**	**[171]**
	Blade Coating	**Thin Films**	**p**	**5.54**	**10^6**	**[172]**
	Bar-Assisted Meniscus Shearing (BAMS)	Thin Films	p	-	-	[173]
	Blade Coating	Thin Films	p	0.14-0.57	-	[174]
	Blade Coating	**Thin Films**	**p**	**2.48**	**-**	**[175]**
	Water-Surface Drag Coating	**Thin Films**	**p**	**16.1**	**10^6**	**[176]**
101	-	-	-	-	-	[140]
102	Drop Cast	Thin Films	p	-	-	[134]
103	Drop Cast	Thin Films	p	0.1-0.4	10^5	[101]
104	Drop Cast	Thin Films	p	$<10^{-4}$	-	[101]
105	Drop Cast	Thin Films	p	10^{-3}-10^{-4}		[101]
106	Drop Cast	Single Crystals	-	-	-	[177]
107	Spread	Thin Films	p	$<10^{-4}$	10^3	[96]
	Drop Cast	Single Crystals	p	0.1	-	[100]
	Spin Coating	Thin Films	p	0.3-0.6	-	[178]
108	Drop Cast	Single Crystals	p	0.1	-	[100]
	Spin Coating	Thin Films	p	0.03-0.11	-	[178]
	Drop Cast	Thin Films	p	0.002-0.029	-	[134]
	Physical Vapor Transport	Single Crystals	p	0.3-0.41	10^6	[140]
	Solvent Assisted Crystallization	Thin Films	p	0.03±0.02	-	[122]

	Vibration Assisted Crystallization	Thin Films	p	0.11±0.03	-	[122]
109	-	-	-	-	-	[134]
110	-	-	-	-	-	[140]
111	Spin Coating	Thin Films	p	0.07	10^7	[179]
112	Solvent Assisted Crystallization	Thin Films	p	2.5×10^{-3}	-	[180]
113	**Drop Cast**	**Thin Films**	**p**	**5.4**	**-**	**[181]**
	Spin Coating	**Thin Films**	**p**	**3.7**	**-**	**[181]**
	Spray	**Thin Films**	**p**	**2.2**	**-**	**[181]**
	Drop Cast	Thin Films	p	6.17×10^{-3}	-	[182]
	Spin Coating	Thin Films	p	0.3	-	[183]
	Spin Coating	**Thin Films**	**p**	**6.2±0.4**	**-**	**[126]**
114	Spin Coating	Thin Films	p	10^{-6}	-	[184]
115	Spin Coating	Thin Films	p	10^{-2}	-	[184]
116	Spin Coating	Thin Films	p	10^{-6}	-	[184]
117	Vacuum Deposition	Thin Films	p	-	-	[185]
	Drop Cast	Thin Films	p	-	-	[185]
118	Vacuum Deposition	Thin Films	p	0.074	10^8	[185]
	Drop Cast	Thin Films	p	3.5×10^{-3}	10^4	[185]
119	Vacuum Deposition	Thin Films	p	2.3×10^{-3}	2×10^3	[186]
120	-	-	-	-	-	[185]
121	Vacuum Deposition	Thin Films	p	0.019	10^6	[185]
	Drop Cast	Thin Films	p	2.5×10^{-4}	10^4	[185]
	Vacuum Deposition	Thin Films	p	0.012	-	[187]
122	-	-	-	-	-	[188]
123	-	-	-	-	-	[187]
124	Spin Coating	Thin Films	p	5.2×10^{-4}	-	[188]
125	Spin Coating	Thin Films	p	-	-	[188]
126	Spin Coating	Thin Films	p	6.0×10^{-4}	-	[188]
127	Vacuum Deposition	Thin Films	p	10^{-4}	10^3	[186]
128	-	-	-	-	-	[189]
129	**Vacuum Deposition**	**Thin Films**	**p**	**5.6**	**10^7**	**[190]**
130	Vacuum Deposition	Thin Films	p	0.1	-	[189]
131	Vacuum Deposition	Thin Films	p	0.4	5×10^5	[191]
132	Vacuum Deposition	Thin Films	p	0.6	7×10^5	[191]
133	Vacuum Deposition	Thin Films	p	0.09	7×10^4	[191]
134	**Vacuum Deposition**	**Thin Films**	**p**	**1.1**	**4×10^6**	**[191]**
	Vacuum Deposition	**Thin Films**	**p**	**1.86**	**-**	**[190]**
135	Vacuum Deposition	Thin Films	p	0.24	2×10^6	[191]
136	Vacuum Deposition	Thin Films	p	0.34	2×10^6	[191]
137	-	-	-	-	-	[192]
138	-	-	-	-	-	[192]
139	-	-	-	-	-	[192]
140	-	-	-	-	-	[192]
141	-	-	-	-	-	[192]
142	Spin Coating	Thin Films	p	1.31×10^{-3}	-	[193]

143	**Spin Coating**	**Thin Films**	**p**	**1.06**	**3.01×10^{6}**	**193**
144	**Spin Coating**	**Thin Films**	**p**	**1.02**	**2.06×10^{6}**	**193**
145	Spin Coating	Thin Films	p	9.47×10^{-2}	1.21×10^{6}	194
146	Spin Coating	Thin Films	p	0.683	4.83×10^{6}	194
147	Spin Coating	Thin Films	p	3.6×10^{-4}	3.45×10^{3}	194
148	Physical Vapor Transport	Single Crystal	p	0.2	6.4×10^{3}	195
149	Vacuum Deposition	Thin Films	p	0.002	10^{4}	196
150	Vacuum Deposition	Thin Films	p	0.001	10^{4}	196
151	Vacuum Deposition	Thin Films	p	-	-	196

Table S6. The performance statistics of five-ring-fused organic molecules listed in Fig. 10 of the main text.

Number	Method	Morphology	Type	Mobility ($cm^2 V^{-1} s^{-1}$)	On/off	Reference
152	Vacuum Deposition	Thin Films	p	2.4×10^{-3}	10^5	197
	Drop Cast	Thin Films	p	0.01	10^5	198
	-	**-**	**p**	**4.5(KMC)[a] 9.4(SCD)[a]**	**-**	**199**
153	Drop Cast	Thin Films	p	1×10^{-3}	10^5	198
154	Vacuum Deposition	Thin Films	p	3×10^{-3}	10^5-10^6	200
155	Vacuum Deposition	Thin Films	p	3×10^{-3}	10^5-10^6	200
156	Vacuum Deposition	Thin Films	p	1.2×10^{-2}	10^3	201
157	Vacuum Deposition	Thin Films	p	9×10^{-4}	10^3	201
158	Vacuum Deposition	Thin Films	p	2×10^{-2}	10^4	201
159	Vacuum Deposition	Thin Films	p	2.3×10^{-2}	10^4	201
160	Vacuum Deposition	Thin Films	p	6.6×10^{-2}	10^4	201
161	Vacuum Deposition	Thin Films	p	0.65	10^4	201
	Spin Coating	Thin Films	p	5×10^{-2}	10^5	201
	Drop Cast	Thin Films	p	0.26	10^2	201
162	**Vacuum Deposition**	**Thin Films**	**p**	**1.9**	**10^5**	**201**
	Spin Coating	Thin Films	p	4.3×10^{-2}	10^5	201
	Drop Cast	**Thin Films**	**p**	**0.24 (1.6)**	**10^5**	**201**
163	Vacuum Deposition	Thin Films	p	0.47	10^5	201
	Spin Coating	Thin Films	p	2.3×10^{-2}	10^4	201
	Drop Cast	Thin Films	p	0.11	10^3	201
164	Vacuum Deposition	Thin Films	p	0.15	10^5	201
	Spin Coating	Thin Films	p	5.6×10^{-3}	10^3	201
	Drop Cast	Thin Films	p	0.1	10^3	201
165	Spin Coating	Thin Films	p	-	-	202
166	**Spin Coating**	**Thin Films**	**p**	**2.8**	**10^5**	**202**
	Blade-Coating	**Single-Crystalline Thin Films**	**p**	**6.3**	**10^7**	**202**

a- Means calculated value

Table S7. The performance statistics of five-ring-fused organic molecules listed in Fig. 11 of the main text.

Number	Method	Morphology	Type	Mobility ($cm^2\ V^{-1}\ s^{-1}$)	On/off	Reference
167	Vacuum Deposition	Thin Films	p	0.5	10^6	203
	Physical Vapor Transport	**Single Crystals**	**p**	**1.8**	**$>10^7$**	**204**
168	**Vacuum Deposition**	**Thin Films**	**p**	**3.1**	**10^3**	**205**
	Drop Cast	**Single Crystals**	**p**	**18.9**	**$>10^7$**	**206**
169	Physical Vapor Transport	Single Crystals	p	0.6	10^5	207
170	**Dip Coating**	**Thin Films**	**p**	**3.8**	**10^6**	**208**
	Drop Cast	**Single Crystals**	**p**	**1.7**	**10^4**	**208**
171	Vacuum Deposition	Thin Films	p	0.011	4×10^4	209
172	Drop Cast	Single Crystals	p	0.47	10^3-10^4	210
	Dip Coating	Thin Films	p	1.4×10^{-3}	10^3	210
173	Vacuum Deposition	Thin Films	p	0.120	1.6×10^5	209
174	Physical Vapor Transport	Single Crystals	p	0.014	10^2	211
175	Physical Vapor Transport	Single Crystals	p	0.20	10^5	211
176	**Physical Vapor Transport**	**Single Crystals**	**p**	**6.5**	**10^6**	**211**
177	**Drop Cast**	**Single Crystals**	**p**	**10.1**	**10^5**	**210**
	Dip Coating	**Thin Films**	**p**	**7.4**	**10^6**	**210**
178	**Edge-Casting**	**Thin Films**	**p**	**6.2**	**10^6**	**212**
179	Edge-Casting	Thin Films	p	0.55	10^5	212
180	**Edge-Casting**	**Thin Films**	**p**	**2.3**	**10^6**	**212**
181	**Vacuum Deposition**	**Thin Films**	**p**	**4.9**	**10^7-10^8**	**213**
182	**Vacuum Deposition**	**Thin Films**	**p**	**11.7**	**10^7-10^8**	**213**
183	**Drop Cast**	**Crystalline Films**	**p**	**12.8**	**$>10^7$**	**214**

Table S8. The performance statistics of five-ring-fused organic molecules listed in Fig. 13 of the main text.

Number	Method	Morphology	Type	Mobility ($cm^2\ V^{-1}\ s^{-1}$)	On/off	Reference
184	-	-	-	-	-	[215]
185	Spin Coating	Thin Films	p	$(1.2\pm0.8) \times 10^{-2}$	10^5	[215]
	Dip Coating	**Crystalline Films**	**p**	**1.7**	**10^7**	**[215]**
	Drop Cast	**Crystalline Films**	**p**	**3.2**	**10^6**	**[216]**
	Dip Coating	Crystalline Films	p	-	-	[217]
	Dip Coating	Crystalline Films	p	2×10^{-3}	-	[218]
	Printing	**Thin Films**	**p**	**1.0**	**-**	**[219]**
186	-	-	-	-	-	[215]
	Dip Coating	Crystalline Films	p	0.19	-	[220]
187	-	-	-	-	-	[215]
188	Slow Cooling	Crystalline Films	p	0.04	-	[221]
189	Slow Cooling	Crystalline Films	p	0.1	-	[221]
190	Slow Cooling	Crystalline Films	p	0.16	-	[221]
191	Spin Coating	Thin Films	n	0.57	-	[222]
192	Spin Coating	Thin Films	Ambipolar	3.4×10^{-2} (p) 0.22 (n)	-	[222]
193	Spin Coating	Thin Films	Ambipolar	1.3×10^{-3} (p) 0.17 (n)	-	[222]
194	**Vacuum Deposition**	**Thin Films**	**p**	**2.6**	**10^7-10^8**	**[223]**
195	Vacuum Deposition	Thin Films	p	0.59	10^7-10^8	[223]
196	Vacuum Deposition	Thin Films	p	0.85	10^7-10^8	[223]
197	Vacuum Deposition	Thin Films	p	0.7	10^7-10^8	[223]
198	Vacuum Deposition	Thin Films	p	~0.1	~10^7	[224]
199	Vacuum Deposition	Thin Films	p	~0.1	~10^7	[224]

Table S9. The performance statistics of five-ring-fused organic molecules listed in Fig. 15 of the main text.

Number	Method	Morphology	Type	Mobility ($cm^2\ V^{-1}\ s^{-1}$)	On/off	Reference
200	Vacuum Deposition	Thin Films	p	0.045	10^3	[225]
201	-	-	n	0.63[a]	-	[226]

a- Means calculated value

Table S10. The performance statistics of five-ring-fused organic molecules listed in Fig. 16 of the main text.

Number	Method	Morphology	Type	Mobility ($cm^2 V^{-1} s^{-1}$)	On/off	Reference
202	Drop Cast	Thin Films	p	9×10^{-3}	4×10^{3}	[227]
203	Drop Cast	Thin Films	p	1.24×10^{-3}	3.1×10^{3}	[227]
204	Drop Cast	Thin Films	p	1.45×10^{-3}	3.3×10^{3}	[227]
205	Drop Cast	Thin Films	p	1.5×10^{-3}	1.7×10^{3}	[227]
206	Spin Coating	Thin Films	p	0.073	1.6×10^{6}	[228]
207	Spin Coating	Thin Films	p	0.079	1.1×10^{7}	[228]
208	Spin Coating	Thin Films	-	-	-	[229]
209	Spin Coating	Thin Films	-	-	-	[229]
210	Spin Coating	Thin Films	p	1.69×10^{-4}	-	[229]
211	Spin Coating	Thin Films	-	-	-	[229]
212	Spin Coating	Thin Films	p	0.12	-	[230]
213	Spin Coating	Thin Films	p	3.4×10^{-3}	6.4×10^{4}	[231]
214	Spin Coating	Thin Films	p	4.53×10^{-4}	4.27×10^{5}	[231]
215	Spin Coating	Thin Films	p	1.13×10^{-2}	1.42×10^{4}	[231]
216	Spin Cast	Thin Films	p	3×10^{-3}	-	[232]
217	Spin Coating	Thin Films	p	0.0368	2×10^{3}	[233]
218	Spin Coating	Thin Films	p	1.7×10^{-2}	4.98×10^{4}	[231]
219	Drop Cast	Thin Films	p	0.36	10^{5}	[234]
220	Spin Coating	Thin Films	p	2.3×10^{-3}	10^{3}-10^{4}	[235]

Table S11. The performance statistics of five-ring-fused organic molecules listed in Fig. 17 of the main text.

Number	Method	Morphology	Type	Mobility ($cm^2\ V^{-1}\ s^{-1}$)	On/off	Reference
221	**Physical Vapor Transport**	**Single Crystals**	**p**	**1.5**	**-**	**236**
222	**Edge-Casting**	**Single Crystals**	**p**	**1.1**	**-**	**237**
223	**Edge-Casting**	**Single Crystals**	**p**	**1.3**	**-**	**237**
224	Physical Vapor Transport	Single Crystals	p	0.02-0.04	10^3	84
225	**Physical Vapor Transport**	**Single Crystals**	**p**	**1**	**-**	**238**
226	Vacuum Deposition	Thin Films	-	-	-	89
227	Vacuum Deposition	Thin Films	p	0.5-0.6	6.53×10^5	89
228	Drop Cast	Single Crystals	p	0.11	8×10^4	239
229	Drop Cast	Single Crystals	p	0.021	2×10^3	239

Table S12. The performance statistics of five-ring-fused organic molecules listed in Fig. 19 of the main text.

Number	Method	Morphology	Type	Mobility ($cm^2 V^{-1} s^{-1}$)	On/off	Reference
230	Lamination	Single Crystals	p	0.11	~10^4	240
231	**Vacuum Deposition**	**Polycrystalline Thin Films**	**p**	**3.2**	**~10^7**	**240**
	Drop Cast	**Single-Crystalline Thin Films**	**p**	**11**	**~10^7**	**240**
232	**Physical Vapor Transport**	**Single Crystals**	**p**	**1.2-2.0**	**10^5**	**84**
233	**Drop Cast**	**Single Crystals**	**p**	**4.5**	**10^5**	**85**
234	Vacuum Deposition	Thin Films	p	0.31-0.75	1.7 x 10^6	89
235	Vacuum Deposition	Thin Films	p	0.38-0.53	1.2 x 10^6	89
236	Vacuum Deposition	Thin Films	p	3.8 x 10^{-3}	5 x 10^7	197
237	Physical Vapor Transport	Single Crystals	p	6.9 x 10^{-3}	-	241
238	Dip Coating	Thin Films	p	0.058	10^3	242

Table S13. The performance statistics of five-ring-fused organic molecules listed in Fig. 20 of the main text.

Number	Method	Morphology	Type	Mobility ($cm^2 V^{-1} s^{-1}$)	On/off	Reference
239	**Drop Cast**	**Single Crystals**	**p**	**1.8**	**10^4**	**[85]**

Table S14. The performance statistics of five-ring-fused organic molecules listed in Fig. 21 of the main text.

Number	Method	Morphology	Type	Mobility ($cm^2\ V^{-1}\ s^{-1}$)	On/off	Reference
240	Vacuum Deposition	Thin Films	p	0.1	-	[243]
	Vacuum Deposition	Thin Films	p	5.9×10^{-4}	-	[244]
	Physical Vapor Transport	**Single Crystals**	**p**	**0.12-1.0**	**10^5-10^6**	**[245]**
	Physical Vapor Transport	Single Crystals	p	0.55	-	[246]
241	**Physical Vapor Transport**	**Single Crystals**	**p**	**3.61**	**-**	[246]
242	Physical Vapor Transport	Single Crystals	p	5×10^{-6}	-	[246]
243	Physical Vapor Transport	Single Crystals	p	2.5×10^{-5}	-	[246]
244	Vacuum Deposition	Thin Films	p	0.06	3×10^4	[247]
245	Vacuum Deposition	Thin Films	p	0.22	3×10^5	[247]
246	Vacuum Deposition	Thin Films	p	6×10^{-3}	10^3	[247]
247	Vacuum Deposition	Thin Films	p	-	-	[248]
	Physical Vapor Transport	Single Crystals	p	-	-	[248]
248	Vacuum Deposition	Thin Films	p	9.1×10^{-3}	-	[244]
249	Vacuum Deposition	Thin Films	p	0.02	3×10^4	[247]
250	Vacuum Deposition	Thin Films	p	0.05	3×10^4	[247]
251	Vacuum Deposition	Thin Films	p	4×10^{-4}	2×10^0	[247]
252	-	-	p	0.09 (KMC)[a] 1.6 (SCD)[a]	-	[199]
253	Vacuum Deposition	Thin Films	-	-	-	[244]
254	Vacuum Deposition	Thin Films	p	4.1×10^{-3}	-	[244]
255	Vacuum Deposition	Thin Films	p	0.12	1.2×10^5	[248]
	Physical Vapor Transport	Single Crystals	p	0.5	-	[248]
	Physical Vapor Transport	Single Crystals	p	0.8	1.7×10^7	[249]
256	Vacuum Deposition	Thin Films	p	1×10^{-5}	-	[250]
257	Vacuum Deposition	Thin Films	p	$(1.3\text{-}3.0) \times 10^{-3}$	-	[250]
258	Vacuum Deposition	Thin Films	p	0.03	10^6	[251]
259	Vacuum Deposition	Thin Films	p	0.2	5×10^6	[251]
260	Vacuum Deposition	Thin Films	p	0.015	10^6	[251]
261	Drop Cast	Single Crystals	p	0.084	-	[252]
262	Vacuum Deposition	Thin Films	p	0.04	10^6	[251]
263	Vacuum Deposition	Thin Films	p	10^{-3}	10^5	[253]
264	Vacuum Deposition	Thin Films	p	-	-	[251]
265	Vacuum Deposition	Thin Films	p	0.11	5×10^4	[251]
266	Vacuum Deposition	Thin Films	p	1.2×10^{-4}	10^3	[254]
267	Vacuum Deposition	Thin Films	p	0.008-0.01	10^5	[254]
268	Vacuum Deposition	Thin Films	p	0.085-0.14	10^7	[254]
269	Vacuum Deposition	Thin Films	p	-	-	[254]
270	Vacuum Deposition	Thin Films	p	-	-	[254]
271	Vacuum Deposition	Thin Films	p	0.07-0.12	10^6-10^7	[250]
	Vacuum Deposition	Thin Films	p	0.12	10^7	[251]
272	-	-	-	-	-	[255]

273	-	-	-	-	-	[255]
274	-	-	-	-	-	[255]
275	-	-	-	-	-	[255]
276	-	-	p	10^{-3} [b]	-	[255]
277	-	-	-	-	-	[255]
278	-	-	-	-	-	[256]
	Vacuum Deposition	Thin Films	p	7×10^{-3}	10^{4}	[257]
	Vacuum Deposition	Thin Films	p	1×10^{-4}	10^{2}	[258]
279	-	-	-	0.4	-	[256]
	Vacuum Deposition	Thin Films	p	3×10^{-3}	10^{3}	[257]
	Vacuum Deposition	Thin Films	p	6×10^{-2}	10^{3}	[258]
280	-	-	-	-	-	[259]
281	Vacuum Deposition	Thin Films	p	0.03	-	[259]
	Drop Cast	Thin Films	p	6.4×10^{-3}	-	[259]
	Vacuum Deposition	Thin Films	p	0.1	10^{6}	[258]
282	Vacuum Deposition	Thin Films	p	7.4×10^{-4}	6.4×10^{3}	[260]
	Shearing Deposition	Thin Films	p	7×10^{-4}	3.7×10^{3}	[260]
283	Vacuum Deposition	Thin Films	p	-	-	[260]
	Shearing Deposition	Thin Films	p	7.6×10^{-4}	10^{4}	[260]
284	Vacuum Deposition	Thin Films	p	7×10^{-3}	2.4×10^{3}	[260]
	Shearing Deposition	Thin Films	p	5.9×10^{-4}	6.2×10^{3}	[260]
285	Vacuum Deposition	Thin Films	p	-	-	[260]
	Shearing Deposition	Thin Films	p	4.7×10^{-4}	2.3×10^{2}	[260]

a- Means calculated value

b- Time-of-flight measurement

Table S15. The performance statistics of five-ring-fused organic molecules listed in Fig. 23 of the main text.

Number	Method	Morphology	Type	Mobility ($cm^2 V^{-1} s^{-1}$)	On/off	Reference
286	Vacuum Deposition	Thin Films	p	-	-	[261]
287	Vacuum Deposition	Thin Films	p	0.25±0.09	~10^5	[261]

Table S16. The performance statistics of five-ring-fused organic molecules listed in Fig. 24 of the main text.

Number	Method	Morphology	Type	Mobility ($cm^2 V^{-1} s^{-1}$)	On/off	Reference
288	Vacuum Deposition	Thin Films	n	1×10^{-3}	3×10^4	[262]
289	Vacuum Deposition	Thin Films	n	0.01	5×10^6	[263]
290	Vacuum Deposition	Thin Films	n	0.02	4×10^7	[263]
	Vacuum Deposition	Thin Films	n	0.02	7×10^6	[262]
291	Vacuum Deposition	Thin Films	n	0.01	2×10^7	[263]
292	Vacuum Deposition	Thin Films	n	0.01	2×10^6	[262]
293	Vacuum Deposition	Thin Films	n	0.01	2×10^5	[262]
294	Vacuum Deposition	Thin Films	n	0.06	10^5	[262]
295	Vacuum Deposition	Thin Films	n	0.03	5×10^6	[262]
	Spin Coating	Thin Films	n	1×10^{-3}	$>10^6$	[263]
296	-	-	-	-	-	[264]
297	-	-	-	-	-	[264]
298	-	-	-	-	-	[264]
299	-	-	-	-	-	[264]

Table S17. The performance statistics of five-ring-fused organic molecules listed in Fig. 25 of the main text.

Number	Method	Morphology	Type	Mobility ($cm^2 V^{-1} s^{-1}$)	On/off	Reference
300	Vacuum Deposition	Thin Films	p	$\sim 10^{-5}$	10^4-10^5	[265]

Table S18. The performance statistics of five-ring-fused organic molecules listed in Fig. 26 of the main text.

Number	Method	Morphology	Type	Mobility ($cm^2\ V^{-1}\ s^{-1}$)	On/off	Reference
301	Spin Coating	Thin Films	p	1.8×10^{-3}	3×10^4	[266]
302	Spin Coating	Thin Films	-	-	-	[267]
303	Spin Coating	Thin Films	-	-	-	[267]
304	Spin Coating	Thin Films	p	2.3×10^{-3}	10^5	[268]
305	Spin Coating	Thin Films	p	0.02	10^5	[267]
306	Spin Coating	Thin Films	p	9.6×10^{-3}	10^5	[267]
307	Spin Coating	Thin Films	p	1.8×10^{-3}	10^3	[267]
308	Spin Coating	Thin Films	p	6×10^{-4}	5×10^4	[268]

Table S19. The performance statistics of five-ring-fused organic molecules listed in Fig. 27 of the main text.

Number	Method	Morphology	Type	Mobility ($cm^2\ V^{-1}\ s^{-1}$)	On/off	Reference
309	Vacuum Deposition	Thin Films	p	0.22	10^4	[269]
310	Vacuum Deposition	Thin Films	Ambipolar	0.08 (p) 0.09 (n)	10^4	[269]
311	Vacuum Deposition	Thin Films	Ambipolar	0.23 (p) 0.21 (n)	-	[270]
312	Vacuum Deposition	Thin Films	Ambipolar	0.11 (p) 0.15 (n)	10^4	[269]
	-	-	Ambipolar	0.5766 (p)[a] 7.441 (n)[a]	-	[271]
313	Vacuum Deposition	Thin Films	n	0.07	10^6	[272]
314	Vacuum Deposition	Thin Films	n	0.03	10^6	[272]
315	Vacuum Deposition	Thin Films	n	0.02	-	[273]
316	Vacuum Deposition	Thin Films	p	1.08×10^{-5}	-	[274]
	Spin Coating	Thin Films	p	8.23×10^{-6}	-	[274]
	Vacuum Deposition	Thin Films	p	$(1.5 \pm 0.2) \times 10^{-3}$	-	[275]
	Vacuum Deposition	Thin Films	p	0.11	-	[276]
	Vacuum Deposition	Thin Films	Ambipolar	0.2 (p) 0.01 (n)	-	[277]
317	Vacuum Deposition	Thin Films	-	-	-	[278]
318	Vacuum Deposition	Thin Films	-	-	-	[278]
	Vacuum Deposition	Thin Films	-	-	-	[279]
319	Vacuum Deposition	Thin Films	p	2.4×10^{-3}	10^3	[278]
320	Vacuum Deposition	Thin Films	-	-	-	[278]
321	Vacuum Deposition	Thin Films	p	5×10^{-3}	10^2	[278]
322	Vacuum Deposition	Thin Films	-	-	-	[278]
	Vacuum Deposition	Thin Films	p	0.3	2×10^6	[279]
323	Vacuum Deposition	Thin Films	p	0.16	10^4	[278]
324	Vacuum Deposition	Thin Films	p	0.03	10^4	[279]
325	Vacuum Deposition	Thin Films	p	2.1×10^{-4}	10^2	[278]

a- Means calculated value

Table S20. The performance statistics of five-ring-fused organic molecules listed in Fig. 28 of the main text.

Number	Method	Morphology	Type	Mobility ($cm^2 V^{-1} s^{-1}$)	On/off	Reference
326	Vacuum Deposition	Thin Films	p	5×10^{-5}	10^3	280
	Vacuum Deposition	Thin Films	p	0.3-0.45	-	281
327	**Vacuum Deposition**	**Thin Films**	**p**	**1.4**	**-**	**282**
	-	**-**	**Ambipolar**	**2.3 (p) [a]** **3.89 (n) [a]**	**-**	**283**
328	Vacuum Deposition	Thin Films	p	3.2×10^{-3}	-	284
329	Vacuum Deposition	Thin Films	p	3×10^{-5}	-	284
330	Vacuum Deposition	Thin Films	p	$(3\text{-}6) \times 10^{-3}$	$(2\text{-}5) \times 10^3$	280
331	Vacuum Deposition	Thin Films	p	1×10^{-3}	$(5\text{-}7) \times 10^2$	280
332	Vacuum Deposition	Thin Films	p	0.02-0.07	-	285
	Drop Cast	Thin Films	n	3×10^{-4}	-	285
	-	-	Ambipolar	0.71 (p) [a] 0.03 (n) [a]	-	286
	-	-	Ambipolar	3.119 (p) [a] 0.1149 (n) [a]	-	271

a- Means calculated value

Table S21. The performance statistics of five-ring-fused organic molecules listed in Fig. 29 of the main text.

Number	Method	Morphology	Type	Mobility ($cm^2\ V^{-1}\ s^{-1}$)	On/off	Reference
333	Vacuum Deposition	Thin Films	p	-	-	287
334	Vacuum Deposition	Thin Films	p	(1-2) x 10^{-5}	-	287
335	-	-	-	-	-	288
	Vacuum Deposition	Thin Films	p	10^{-5}	-	289
336	-	-	Ambipolar	0.55 (p) [a] 3.51 (n) [a]	-	283
337	Vacuum Deposition	Thin Films	p	0.13	-	282
	-	**-**	**Ambipolar**	**0.45 (p) [a]** **3.39 (n) [a]**	**-**	**283**
	Physical Vapor Transport	**Single Crystals**	**n**	**3.39**	**1.08 x 10^4**	**290**
338	**-**	**-**	**Ambipolar**	**0.21 (p) [a]** **5.01 (n) [a]**	**-**	**286**
	Vacuum Deposition	**Thin Films**	**p**	**0.3-1.2**	**-**	**291**
	-	**-**	**Ambipolar**	**0.3446 (p) [a]** **7.145 (n) [a]**	**-**	**271**
339	Vacuum Deposition	Thin Films	Ambipolar	0.02-0.05 (p) (2-4) x 10^{-4} (n)	-	285
	Drop Cast	Thin Films	-	-	-	285
	-	-	Ambipolar	5 x 10^{-3} (p) [a] 1.24 (n) [a]	-	286
	-	**-**	**n**	**1.92 [a]**	**-**	**288**
	-	-	Ambipolar	1.153 x 10^{-2} (p) [a] 5.565 (n) [a]	-	271

a- Means calculated value

Table S22. The performance statistics of five-ring-fused organic molecules listed in Fig. 31 of the main text.

Number	Method	Morphology	Type	Mobility ($cm^2\ V^{-1}\ s^{-1}$)	On/off	Reference
340	Vacuum Deposition	Thin Films	p	2×10^{-2}	10^2	[292]
341	Vacuum Deposition	Thin Films	p	2×10^{-5}	10^2	[292]
342	Vacuum Deposition	Thin Films	p	1×10^{-2}	10^5	[292]
343	Physical Vapor Transport	Single Crystals	p	1×10^{-4}	-	[293]
344	-	-	-	-	-	[293]
345	Physical Vapor Transport	Single Crystals	p	5×10^{-4}	-	[293]
346	Spin Coating	Thin Films	p	0.03	10^4-10^5	[294]
347	Spin Coating	Thin Films	p	9.3×10^{-3}	10^3-10^4	[294]
348	Spin Coating	Thin Films	p	0.11	10^3-10^4	[294]
349	-	-	Ambipolar	0.06 (p) [a] 0.02 (n) [a]	-	[286]
	-	-	Ambipolar	0.2162 (p) [a] 0.0448 (n) [a]	-	[271]
350	Vacuum Deposition	Thin Films	-	-	-	[285]
	-	-	-	-	-	[286]
351	Vacuum Deposition	Thin Films	p	$(4\text{-}7) \times 10^{-4}$	-	[295]
352	Vacuum Deposition	Thin Films	-	-	-	[295]
353	-	-	Ambipolar	0.01 (p) [a] 0.07 (n) [a]	-	[286]
	Vacuum Deposition	Thin Films	p	0.3-0.7	3×10^5	[295]

a- Means calculated value

Table S23. The performance statistics of five-ring-fused organic molecules listed in Fig. 32 of the main text.

Number	Method	Morphology	Type	Mobility ($cm^2\ V^{-1}\ s^{-1}$)	On/off	Reference
354	-	-	-	-	-	271
355	Vacuum Deposition	Thin Films	n	(2-6) x 10^{-5}	-	287
	-	-	-	2.49 [a]	-	288
356	Vacuum Deposition	Thin Films	n	0.05-0.12	-	287
	Vacuum Deposition	Thin Films	n	0.04-0.12	-	296
	-	-	-	0.79	-	288
357	**Vacuum Deposition**	**Thin Films**	**Ambipolar**	**0.05-0.22 (p) 0.3-1.1 (n)**	**-**	**291**
358	**Vacuum Deposition**	**Thin Films**	**n**	**1.0-3.3**	**-**	**285**
	Drop Cast	Thin Films	n	3 x 10^{-3}	-	285
	Spin Coating	Thin Films	n	5 x 10^{-3}	10^3-10^4	297
	Drop Cast	**Single Crystals**	**n**	**1.77**	**-**	**298**
	Drop Cast	**Single Crystals**	**n**	**1.2**	**-**	**299**
	-	-	n	0.72	-	288
	-	-	Ambipolar	0.02 (p) [a] 0.25 (n) [a]	-	286
	Dip Coating	**Thin Films**	**n**	**11.1**	**10^6-10^7**	**300**
	Drop Cast	**Thin Films**	**n**	**11.0**	**10^6-10^7**	**300**
	Vacuum Deposition	**Thin Films**	**n**	**6.8**	**10^6-10^7**	**300**
	Dip Coating	Thin Films	n	0.013	10^4	301
359	**Drop Cast**	**Thin Films**	**n**	**2.7**	**-**	**302**
360	**Drop Cast**	**Thin Films**	**n**	**2.3**	**-**	**302**
361	**Dip Coating**	**Thin Films**	**n**	**1.1**	**-**	**302**
362	**Dip Coating**	**Thin Films**	**n**	**2.7**	**-**	**302**
363	**Drop Cast**	**Thin Films**	**n**	**6.6**	**-**	**302**
364	**Dip Coating**	**Thin Films**	**n**	**27.8**	**-**	**302**
365	Dip Coating	Thin Films	n	0.56	10^5	301
366	Spin Coating	Thin Films	n	3.5 x 10^{-4}	10^3-10^4	297

a- Means calculated value

Table S24. The performance statistics of five-ring-fused organic molecules listed in Fig. 34 of the main text.

Number	Method	Morphology	Type	Mobility ($cm^2\ V^{-1}\ s^{-1}$)	On/off	Reference
367	-	-	-	-	-	[303]
368	**-**	**-**	**Ambipolar**	**2.74 (p) [a]** **0.48 (n) [a]**	**-**	**[304]**
369	**-**	**-**	**Ambipolar**	**10.64 (p) [a]** **2.02 (n) [a]**	**-**	**[304]**
370	Slow Cooling	Thin Films	-	-	-	[305]
371	Slow Cooling	Thin Films	-	0.29	-	[305]
372	Slow Cooling	Thin Films	-	0.87	-	[305]
373	Slow Cooling	Thin Films	-	0.28	-	[305]
	Slow Cooling	Liquid Crystal	p	10^{-3} [b]	-	[306]
	Slow Cooling	Liquid Crystal	p	1.7×10^{-3} [c]	-	[306]
374	Vacuum Deposition	Thin Films	n	10^{-6}	-	[307]
	Spin Coating	Thin Films	-	-	-	[303]
375	-	-	-	-	-	[308]
376	Spin Coating	Thin Films	n	-	-	[303]
377	Spin Coating	Thin Films	n	-	-	[303]
378	Spin Coating	Thin Films	n	8.3×10^{-4}	-	[303]
379	Spin Coating	Thin Films	n	1.58×10^{-3}	-	[303]
380	Spin Coating	Thin Films	n	1.36×10^{-3}	-	[303]
381	Spin Coating	Thin Films	n	1.45×10^{-3}	-	[303]
382	Spin Coating	Thin Films	n	5.13×10^{-3}	-	[303]
383	Spin Coating	Thin Films	n	2.34×10^{-3}	-	[303]
384	Slow Cooling	Polycrystalline	n	-	-	[309]
385	Slow Cooling	Polycrystalline	n	0.071	-	[309]
386	Slow Cooling	Amorphous	n	0.021	-	[309]
387	-	-	-	-	-	[310]
388	-	-	-	-	-	[310]
389	-	-	-	-	-	[310]
390	-	-	-	-	-	[310]
391	-	-	-	-	-	[310]
392	-	-	-	-	-	[310]
393	-	-	-	-	-	[310]
394	-	-	-	10^{-3} [d]	-	[310]
395	Vacuum Deposition	Thin Films	n	1.9×10^{-4}	-	[307]

a- Means calculated value
b- Means time-of-flight (TOF) measurement
c- Means space-charge-limited current (SCLC) measurement
d- Means pulse-radiolysis time-resolved microwave conductivity technique

Table S25. The performance statistics of five-ring-fused organic molecules listed in Fig. 35 of the main text.

Number	Method	Morphology	Type	Mobility ($cm^2 V^{-1} s^{-1}$)	On/off	Reference
396	Spin Coating	Thin Films	p	0.3	10^6-10^7	311
	Spin Coating	Thin Films	p	0.16	-	312
397	Spin Coating	Thin Films	p	0.27	10^6	313
398	Spin Coating	Thin Films	p	0.17	10^6	313
399	Spin Coating	Thin Films	p	0.21	10^6	313
400	Spin Coating	Thin Films	p	0.15	-	312
401	Spin Coating	Thin Films	p	0.33	-	312
402	Spin Coating	Thin Films	p	0.22	-	312
403	Spin Coating	Thin Films	p	0.67	10^6-10^7	311
404	Spin Coating	Thin Films	p	0.24	10^6	313
405	Spin Coating	Thin Films	p	6.8×10^{-3}	-	314
406	Spin Coating	Thin Films	p	5.3×10^{-4}	-	314
407	Spin Coating	Thin Films	p	2.3×10^{-4}	-	314
408	Spin Coating	Thin Films	-	-	-	314
409	Spin Coating	Thin Films	p	1.4×10^{-3}	2.7×10^5	315
410	Spin Coating	Thin Films	p	1.54×10^{-2}	-	316
411	Spin Coating	Thin Films	p	5.62×10^{-3}	-	316

Table S26. The performance statistics of five-ring-fused organic molecules listed in Fig. 36 of the main text.

Number	Method	Morphology	Type	Mobility ($cm^2 V^{-1} s^{-1}$)	On/off	Reference
412	Vacuum Deposition	Thin Films	Ambipolar	0.023 (p) 0.043 (n)	3×10^3 (p) 2×10^4 (n)	[317]
413	Vacuum Deposition	Thin Films	p	0.05	4×10^4	[317]
	Vacuum Deposition	Thin Films	p	0.04±0.01	-	[318]
414	Vacuum Deposition	Thin Films	Ambipolar	0.02 (p) 0.22 (n)	5×10^3 (p) 10^4 (n)	[317]
415	Vacuum Deposition	Thin Films	n	0.33	-	[318]
416	Spin Coating	Thin Films	n	0.33	10^2	[319]
	Blade Coating	Thin Films	n	0.49	10^2-10^3	[319]
417	Blade Coating	Thin Films	n	0.13	10^4	[320]
418	Blade Coating	Thin Films	n	0.03	10^3	[320]
419	Spin Coating	Thin Films	p	5.4×10^{-4}	10^4	[321]
420	Spin Coating	Thin Films	p	1.1×10^{-4}	10^3	[321]
421	Spin Coating	Thin Films	Ambipolar	5.04×10^{-4} (p) 6.72×10^{-4} (n)	-	[322]
422	Spin Cast	Thin Films	n	0.15	-	[323]
423	Spin Cast	Thin Films	Ambipolar	2.4×10^{-3} (p) 1.5×10^{-2} (n)	-	[324]
424	Spin Cast	Thin Films	n	0.15	$\sim 5 \times 10^5$	[324]
425	Spin Cast	Thin Films	n	4.4×10^{-4}	-	[325]
426	Spin Coating	Thin Films	Ambipolar	8.3×10^{-5} (p) [a] 6.6×10^{-5} (n) [a]	-	[326]
427	Spin Coating	Thin Films	Ambipolar	1.8×10^{-5} (p) [a] 3×10^{-6} (n) [a]	-	[326]
428	Spin Coating	Thin Films	n	2.43×10^{-4}	-	[327]
429	Spin Coating	Thin Films	n	6.02×10^{-4}	-	[327]
430	Spin Coating	Thin Films	n	1.6×10^{-5} (n) [a]	-	[326]
431	Spin Coating	Thin Films	Ambipolar	3.69×10^{-4} (p) [a] 2.43×10^{-4} (n) [a]	-	[328]
432	Spin Coating	Thin Films	Ambipolar	5.32×10^{-4} (p) [a] 4.92×10^{-4} (n) [a]	-	[328]
433	Spin Coating	Thin Films	Ambipolar	6.03×10^{-4} (p) [a] 6.02×10^{-4} (n) [a]	-	[328]
434	Spin Coating	Thin Films	n	1.35×10^{-4} [a]	-	[329]
435	Spin Coating	Thin Films	n	2.79×10^{-4} [a]	-	[329]
436	Spin Coating	Thin Films	-	-	-	[329]

a- Means space-charge-limited current (SCLC) measurement

Table S27. The performance statistics of five-ring-fused organic molecules listed in Fig. 37 of the main text.

Number	Method	Morphology	Type	Mobility ($cm^2\ V^{-1}\ s^{-1}$)	On/off	Reference
437	**Spin Coating**	**Thin Films**	**p**	**0.8-1.2**	**10^3**	**330**
	Spin Coating	**Thin Films**	**p**	**3.6**	**-**	**331**
	Spin Coating	**Thin Films**	**p**	**1.5-2.5**	**-**	**332**
	Spin Coating	Thin Films	p	0.068	$>10^3$	333
	Spin Coating	**Thin Films**	**p**	**1.38±0.19**	**-**	**334**
	In-Situ Rubber Matrix	**Thin Films**	**p**	**1.66**	**-**	**335**
438	Spin Coating	Thin Films	p	0.2	10^6	330
439	**Spin Coating**	**Thin Films**	**p**	**5.01**	**2×10^6**	**336**
440	Spin Coating	Thin Films	p	0.012	4.98×10^5	337
441	**Spin Coating**	**Thin Films**	**p**	**5.26**	**1.57×10^6**	**337**
442	Spin Coating	Thin Films	p	1.04×10^{-3}	3.85×10^4	337

Table S28. The performance statistics of five-ring-fused organic molecules listed in Fig. 38 of the main text.

Number	Method	Morphology	Type	Mobility ($cm^2\ V^{-1}\ s^{-1}$)	On/off	Reference
443	Vacuum Deposition	Thin Films	n	2.7×10^{-4}	2×10^{4}	53
444	Vacuum Deposition	Thin Films	n	8.8×10^{-4}	2×10^{5}	53
	Vacuum Deposition	Thin Films	n	1.1×10^{-2}	10^{6}	338
445	Vacuum Deposition	Thin Films	n	2.2×10^{-4}	8×10^{5}	338
446	Vacuum Deposition	Thin Films	n	1.4×10^{-6}	2×10^{2}	338
447	Vacuum Deposition	Thin Films	n	7.4×10^{-8}	90	338
448	Vacuum Deposition	Thin Films	n	9.2×10^{-3}	2×10^{6}	338
	Drop Cast	Thin Films	n	1.7×10^{-5}	8×10^{2}	338
449	Vacuum Deposition	Thin Films	n	1.6×10^{-5}	2×10^{3}	338
450	Vacuum Deposition	Thin Films	n	1.2×10^{-4}	10^{4}	338
	Drop Cast	Thin Films	n	5.3×10^{-5}	10^{2}	338
451	Vacuum Deposition	Thin Films	n	1.1×10^{-2}	10^{6}	338
452	-	-		2.0×10^{-3} (p)[a] 8.3×10^{-5} (n)[a]	-	46

a- Means Time-of-Flight measurement

Table S29. The performance statistics of five-ring-fused organic molecules listed in Fig. 39 of the main text.

Number	Method	Morphology	Type	Mobility ($cm^2\ V^{-1}\ s^{-1}$)	On/off	Reference
453	Vacuum Deposition	Thin Films	p	-	-	[339]
454	Drop Cast	Single Crystals	p	0.75	$4.2x10^4$	[340]
	Vacuum Deposition	Thin Films	p	0.058	10^5	[340]
455	Vacuum Deposition	Thin Films	p	7.8×10^{-6}	10^6	[340]
456	Spin Coating	Thin Films	p	-	-	[341]
457	Vacuum Deposition	Thin Films	p	0.012	10^5	[339]
458	Vacuum Deposition	Thin Films	p	1.3×10^{-6}	10^4	[340]
459	Vacuum Deposition	Thin Films	p	-	-	[339]
	Vacuum Deposition	Thin Films	-	-	-	[340]

Table S30. The performance statistics of five-ring-fused organic molecules listed in Fig. 40 of the main text.

Number	Method	Morphology	Type	Mobility ($cm^2\ V^{-1}\ s^{-1}$)	On/off	Reference
460	Spin Coating	Thin Films	p	6.4×10^{-3}	10^3	[342]
461	Spin Coating	Thin Films	p	0.022	10^4	[342]
462	Spin Coating	Thin Films	p	0.035	10^4	[342]
463	Spin Coating	Thin Films	p	0.02	-	[343]
464	Spin Coating	Thin Films	p	0.02	10^4	[344]
465	Spin Coating	Thin Films	p	0.07	10^4	[344]
466	Spin Coating	Thin Films	p	3×10^{-3}	-	[343]
467	Spin Coating	Thin Films	p	0.01	10^3	[344]
468	Spin Coating	Thin Films	p	1×10^{-3}	10^3	[344]
469	Spin Coating	Thin Films	p	3×10^{-3}	-	[343]

Table S31. The performance statistics of five-ring-fused organic molecules listed in Fig. 41 of the main text.

Number	Method	Morphology	Type	Mobility ($cm^2 V^{-1} s^{-1}$)	On/off	Reference
470	-	-	-	0.05[a]	-	[345]
471	Vacuum Deposition	Thin Films	p	2.9×10^{-6}	10^5	[345]
472	-	-	-	0.76[a]	-	[345]
473	Vacuum Deposition	Thin Films	p	6.2×10^{-6}	10^4	[345]
	-	-	p	8.7×10^{-2} [a]	-	[345]
474	-	-	p	0.5 [a]	-	[345]
475	Vacuum Deposition	Thin Films	p	2.5×10^{-6}	10^4	[345]

a- Means calculated mobility

Table S32. The performance statistics of five-ring-fused organic molecules listed in Fig. 42 of the main text.

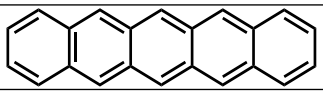
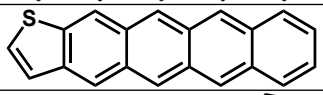
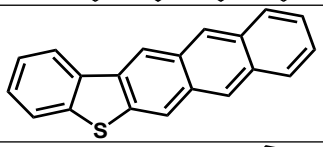
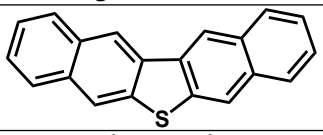
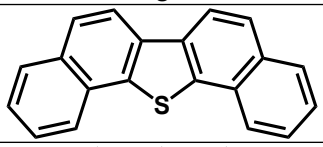
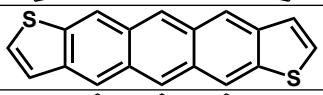
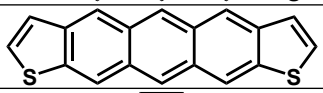
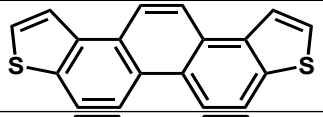
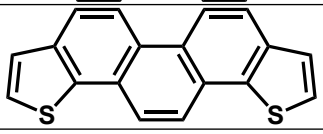
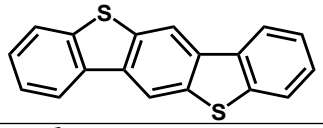
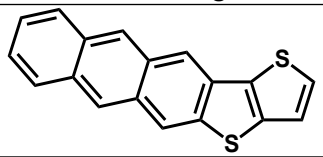
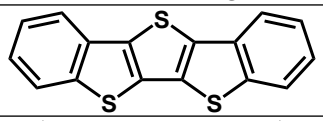
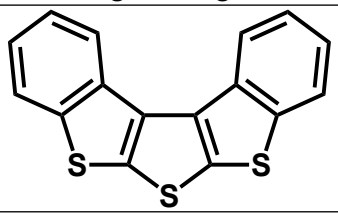
Number	Method	Morphology	Type	Mobility ($cm^2 V^{-1} s^{-1}$)	On/off	Reference
476	Dip Coating	Thin Films	p	0.025	-	[346]
477	Drop Casting	Thin Films	p	5×10^{-5}	-	[347]
478	Drop Casting	Thin Films	p	6×10^{-4}	-	[347]
479	Drop Casting	Thin Films	p	0.19-0.76	-	[347]
480	Vacuum Deposition	Thin Films	p	0.34	10^6-10^7	[348]
	Physical Vapor Transport	**Single Crystals**	**p**	**0.01-3.6**	**10^4-8×10^6**	**[349]**
481	Vacuum Deposition	Thin Films	p	1.77×10^{-4}	10^4-10^5	[348]
	Physical Vapor Transport	Single Crystals	p	10^{-4}-0.014	6×10^2-10^4	[349]
482	Vacuum Deposition	Thin Films	p	3.01×10^{-4}	$(1\text{-}5) \times 10^5$	[348]
	Physical Vapor Transport	Single Crystals	p	3×10^{-4}-0.4	2×10^3-9×10^5	[349]
483	Vacuum Deposition	Thin Films	-	-	-	[350]
484	Vacuum Deposition	Thin Films	-	-	-	[350]
485	Vacuum Deposition	Thin Films	-	-	-	[350]
486	Vacuum Deposition	Thin Films	n	0.2	-	[350]
487	Vacuum Deposition	Thin Films	n	0.42	-	[350]
488	Vacuum Deposition	Thin Films	-	-	-	[350]
489	Spin Coating	Thin Films	n	-	-	[351]
490	Spin Coating	Thin Films	n	1.3×10^{-5}	10^5	[351]
491	Spin Coating	Thin Films	n	5.3×10^{-3}	10^6	[351]
492	Spin Coating	Thin Films	n	-	-	[351]
493	Spin Coating	Thin Films	n	4.8×10^{-4}	10^2	[351]
494	Spin Coating	Thin Films	p	0.05	10^6	[352]
495	Spin Coating	Thin Films	p	0.012	10^4	[352]
496	Spin Coating	Thin Films	p	0.05	-	[353]
497	Spin Coating	Thin Films	p	0.4	-	[353]
498	-	-	Ambipolar	2.77×10^{-4} (p) [a] 2.81×10^{-4} (n)[a]	-	[354]
499	Vacuum Deposition	Thin Films	n	0.39	10^6	[355]
500	Vacuum Deposition	Thin Films	p	1.3×10^{-3}	-	[356]
501	Spin Coating	Thin Films	p	0.062	3×10^3	[341]
502	Spin Coating	Thin Films	-	-	-	[341]
503	**Dip Coating**	**Thin Films**	**p**	**3.8**	**10^5**	**[242]**
504	**Dip Coating**	**Thin Films**	**p**	**3.0**	**10^6**	**[242]**
505	Dip Coating	Thin Films	p	0.64	10^4	[242]
506	Spin Coating	Thin Films	n	2.4×10^{-6} [a]	-	[357]
507	Spin Coating	Thin Films	n	9.88×10^{-6} [a]	-	[357]
508	Spin Coating	Thin Films	n	3.88×10^{-7} [a]	-	[357]

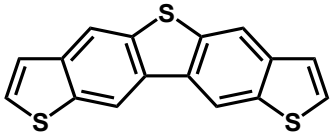
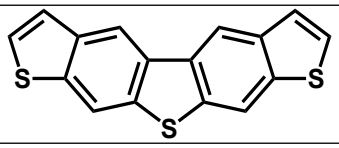
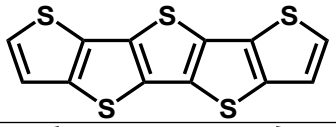
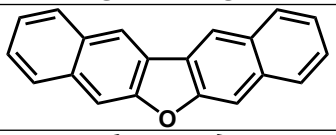
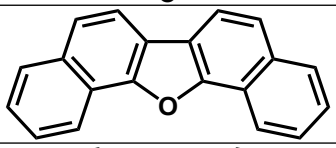
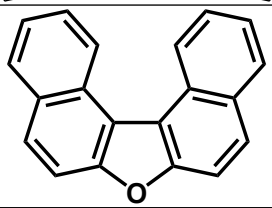
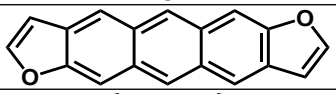
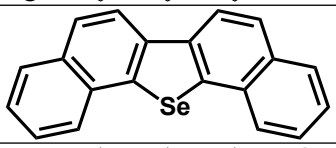
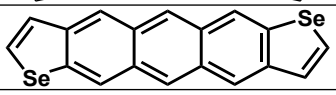
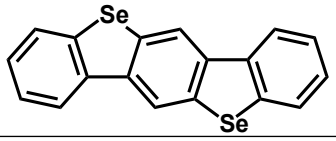
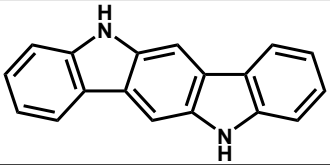
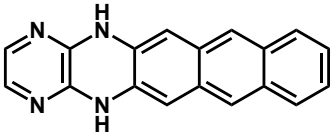
a- Means SCLC measurement

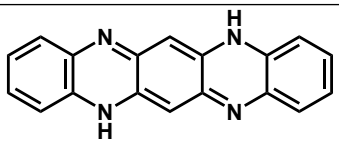
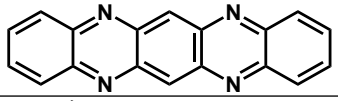
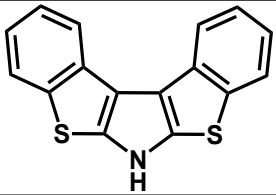
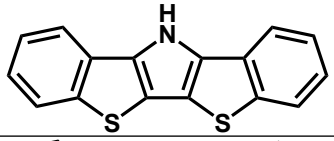
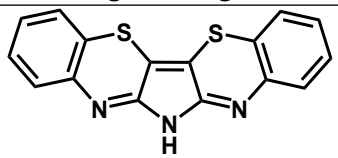
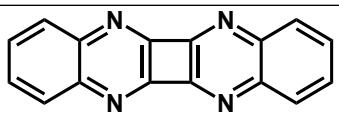
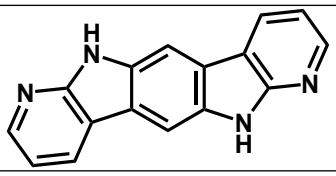
Table S33. The performance statistics of five-ring-fused organic molecules listed in Fig. 43 of the main text.

Number	Method	Morphology	Type	Mobility ($cm^2\ V^{-1}\ s^{-1}$)	On/off	Reference
509	Spin Coating	Thin Films	p	8×10^{-3}	-	[358]
510	Spin Coating	Thin Films	Ambipolar	0.65 (p); 0.1 (n)	-	[358]
511	Spin Coating	Thin Films	p	0.014	10^4	[359]
512	Spin Coating	Thin Films	p	4×10^{-3}	10^3	[359]
513	Spin Coating	Thin Films	p	0.28	10^3	[359]
514	Spin Coating	Thin Films	p	0.19	10^4	[359]
515	Spin Coating	Thin Films	n	0.11	10^4	[360]
516	Spin Coating	Thin Films	Ambipolar	0.015 (p) 0.15 (n)	10^4 (p) 10^3 (n)	[360]
517	Spin Coating	Thin Films	n	0.4	10^6	[360]
518	Spin Coating	Thin Films	n	4.5×10^{-3}	$\sim 10^4$	[361]
519	Spin Coating	Thin Films	n	0.013	$\sim 10^4$	[361]

Table S34. The performance statistics of five-ring-fused organic molecules listed in Fig. 44 of the main text.

Number	Name	Molecular Structure	HOMO (eV)	LUMO (eV)	Bandgap (eV)	Reference
	Pentacene		-5.0	-3.2	1.8	[362]
056	-		-5.17	-3.21	1.96	[68]
072	ABT		-5.35	-2.85	2.5	[78]
079	DNT-V		-5.68	-2.73	2.95	[82]
083	DNT-W		-5.87	-	-	[84]
085	*anti*-ADT		-5.1	-2.59	2.21	[87]
086	*syn*-ADT		-5.1	-2.59	2.21	[87]
128	PDT-2		-5.49	-1.32	4.17	[189]
130	PDT-1		-5.63	-1.19	4.44	[189]
152	-		-5.8	-2.5	3.3	[197]
156	ATT		-5.3	-2.78	2.52	[201]
167	DBTDT		-5.6	-2.14	3.46	[203]
169	BBTT		-5.64	-1.87	3.77	[207]

171	*anti*-TBBT		-5.6	-2.5	3.1	[209]
173	*syn*-TBBT		-5.6	-2.3	3.3	[209]
200	PTA		-5.33	-2.04	3.29	[225]
221	DNF-V		-5.56	-	-	[236]
224	DNF-W		-5.85	-	-	[84]
225	DNF-U		-5.71	-	-	[238]
226	*anti*-ADF		-5.1	-2.5	2.6	[89]
232	DNS-W		-5.81	-	-	[84]
234	*anti*-ADS		-5	-2.6	2.4	[89]
236	-		-5.6	-2.4	3.2	[197]
240	-		-5.12	-2.15	2.97	[248]
351	-		-5.354	-1.995	3.359	[295]

340	-		-5.21	-	-	[292]
354	-		-5.651	-3.318	2.333	[271]
453	-		-5.84	-2.13	3.71	[339]
457	-		-5.3	-1.79	3.51	[339]
480	-		-5.44	-3.03	2.41	[348]
483	-		-6.59	-3.92	2.67	[350]
500	-		-5.5	-3	2.5	[356]

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