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# ESI for Journal of Materials Chemistry C: C7TC01197K



Table S1. Phase transition temperatures and enthalpy changes of  $(m-C_nOPhO)_8PcCu$  (n = 1-20: 2a-o).



Phase nomenclature: K= crystal, Col<sub>ro</sub> = rectangular ordered columnar, Col<sub>ho</sub> = hexagonal ordered columnar mesophase, Col<sub>hd</sub>=hexagonal disordered columnar mesophase, I.L. = isotropic liquid and v = virgin state. <sup> $\ddot{I}$ </sup>: These peaks were so close to calcurate the enthalpy changes. \*<sup>1</sup>: Ref[17], \*<sup>2</sup>: Ref[21], \*<sup>3</sup>: Ref[20].



**Fig. S1.** DSC thermograms of  $(m-C_8OPhO)_8PcCu$  (**2h**). The heating and cooling rates were 2.5°C/min.



**Fig. S2**. Photomicrographs of  $(m-C_8OPhO)_8PcCu$  (**2h**) at various temperatures. (A) The virgin state of X<sub>1</sub> at 27.7°C; (B) X<sub>2</sub> at 60.0°C without discernible change; (C) Col<sub>ho1</sub> at 100.0°C with change of the birefringence; (D) Col<sub>ro</sub> at 160.0°C; (E) when IL heated over 205.0°C was cooled down to 200.0°C, it was transforming into Col<sub>ho3</sub>; (F) the IL was completely transformed into Col<sub>ho3</sub> at 200.0°C; (G) when the Col<sub>ho3</sub> in (F) was rapidly cooled down to RT, a mixture of supercooled Col<sub>ho3</sub> and partially resulted Col<sub>ho2</sub> (small dark dots); (H) only when the supercooled Col<sub>ho3</sub> was held at 165.0°C, the Col<sub>ro</sub> (bright platelets) phase appeared with Col<sub>ho2</sub> (dark hexagons).

$ \frac{1}{22} (m-C_1OPhO)_8PoCl_1 = Col_{(10}(22)) a 120^{10} (22) = 2 (10) (12) (12) (12) (12) (12) (12) (12) (12$	Compound	Mesophase lattice constants(Å)	Deak No	Spacing(Å)		Miller indices
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Compound		Feak NU.	Observed	Calculated	(h k l)
$ \frac{1}{16} (m - C_{3}OPhO)_{8}OPC u \\ = \frac{20.4 p = 20.5}{2 = 2.0  for _{p} = 1.1} = \frac{1}{6} = \frac{1}{34} = \frac{1}{16} = \frac{1}{34} = \frac{1}{16} = \frac{1}{34} = \frac{1}{16} = \frac{1}{34} = \frac{1}{16} = 1$	<b>2a</b> · ( <i>m</i> -C₄OPhO)₀PcCu <sup>l</sup>	Col <sub>ro1</sub> (P2 <sub>1</sub> /a) at 230 °C	1	20.1	19.7	(1 1 0)
$\frac{h = 0.0}{2 = 2.0  \text{tr}_{p} = 1.1} = \frac{4}{5} = \frac{9.24}{5} = \frac{9.19}{5} = 9.1$		a = 29.4 b = 26.5	2	13.2	12.1	(1 2 0)
$\frac{2 = 2.0 \text{ for } p = 1.1}{9} = \frac{5}{9.49} = \frac{9.49}{9.49} $		<i>h</i> = 6.09	4	9.24	9.19	(3 1 0)
$\frac{1}{2} \frac{1}{6} \frac{6.51}{6} \frac{6.47}{6} \frac{1}{7} \frac{1}{7} \frac{1}{6} \frac{1}{9} \frac{1}{9$		Z = 2.0 for $\rho$ = 1.1	5	8.46 7.39	8.46 7.35	(130)
$\frac{1}{26:} (m-C_2OPhO)_8PcCu} \begin{bmatrix} c_{04}(p^{2m}) at 250^{\circ}C \\ a = 23.6 b = 20.1 \\ b = 50.0 \\ a = 23.6 b = 27.1 \\ b = 50.0 \\ a = 23.6 b = 27.1 \\ b = 50.0 \\ a = 23.6 b = 27.1 \\ b = 50.0 \\ a = 23.6 b = 27.1 \\ b = 50.0 \\ a = 23.6 b = 27.1 \\ b = 50.0 \\ a = 23.6 b = 27.1 \\ b = 50.0 \\ a = 23.6 b = 27.1 \\ b = 50.0 \\ a = 23.6 b = 27.1 \\ b = 50.0 \\ a = 23.6 b = 27.1 \\ b = 50.0 \\ a = 23.6 b = 27.1 \\ b = 50.0 \\ a = 23.6 b = 27.1 \\ b = 50.0 \\ a = 23.6 b = 27.1 \\ b = 50.0 \\ a = 23.6 b = 27.1 \\ b = 50.0 \\ a = 23.6 b = 27.1 \\ b = 50.0 \\ a = 23.6 b = 27.1 \\ b = 50.0 \\ a = 23.6 b = 27.1 \\ b = 50.0 \\ a = 23.6 b = 27.1 \\ c = 10.0 \\ c = 10.$			7	6.51	6.47	(1 4 0)
$\frac{1}{2} \frac{1}{4} \frac{1}$			8	6.09 5.17	- 5 22	h (150)
$\frac{11}{2} + \frac{4.54}{4.6} + \frac{4.60}{6.6} = \begin{pmatrix} 62.0 \\ 0.62.0 \\ 0.75 \\ - 4.65 \\ - 4.65 \\ - 7.16 $			10	4.84	4.82	(6 1 0)
$\frac{15}{2} + \frac{14}{15} + \frac{14}{15} + \frac{14}{15} + \frac{14}{15} + \frac{17}{10} + \frac{17}{10} + \frac{11}{10} + \frac{11}$			11	4.54	4.60	(6 2 0)
$\frac{\operatorname{Cot_{e2}(P2,4)}{\operatorname{P1}} \operatorname{at 310^{\circ \circ \circ}}_{a = 33.6 \ b = 27.1}^{2} \frac{1}{3} \frac{21.1}{36} \frac{11.68}{15.6} \frac{12.0}{10.2} \frac{11.1}{2} \frac{11.1}{36} \frac{11.68}{15.6} \frac{12.0}{10.2} \frac{11.1}{1} $			12	4.15	4.15	(7 1 0)
$\frac{1}{2} = 36 = 2.71$ $= 36 = 0.72.7$ $= 36 = 0.72.7$ $= 36 = 2.71$ $= 500$		Col. (P2./a) at 310 °C	1	21.1	21.1	(1 1 0)
$\frac{p=5.00}{Z=2.0 \text{ for } p=1.1} = \frac{4}{5} + \frac{6}{16} $		a = 33.6 b = 27.1	2	16.8 13.6	16.8 13.6	$(2\ 0\ 0)$ $(0\ 2\ 0)$
$Z = 2.0 \text{ for } \rho = 1.1$ $Z = 2.0 \text{ for } \rho = 1.2$ $Z = 2.0 \text{ for } \rho = 1.1$ $Z = 2.0 \text{ for } \rho = 1.2$ $Z = 2.0 \text{ for } \rho $		<i>h</i> = 5.00	4	8.61	8.64	(3 2 0)
$\frac{1}{26} (m - C_3 OPhO)_8 PcCu = \frac{1}{20} Cal(P2m) at 210°C = 1 (P2m) at 210°C = 1 (P2m$		Z = 2.0 for $\rho$ = 1.1	5	7.18	7.14	(4 2 0)
$\frac{1}{26} (m - C_3 OPhO)_8 PcCu$ $\frac{1}{27} (m - C_3 OPhO)_8 PcCu$ $\frac{1}{28} (m - C_3 OPhO)_8 PcCu$			7	5.73	5.80	(3 4 0)
$\frac{1}{26} (m-C_{3}OPhO)_{8}PcCu = \frac{1}{26} C_{0}(P2m) at 260^{\circ}C_{1} = \frac{1}{236} \frac{2}{367} + \frac{4}{356} = \frac{4}{6} \frac{6}{60} + \frac{1}{13} + \frac{3}{377} + \frac{3}{388} + \frac{4}{6} \frac{6}{60} + \frac{1}{14} + \frac{3}{355} + \frac{1}{355} + \frac{1}{16} + \frac{1}{$			8	5.33	5.36	(150)
$\frac{11}{2}  \frac{4.32}{3.37}  \frac{4.32}{3.36}  \frac{64.60}{4.60} \\ \frac{13}{3}  \frac{3.37}{3.22}  \frac{3.74}{3.26}  \frac{66.60}{6.60} \\ \frac{14}{14}  \frac{3.32}{3.22}  \frac{3.74}{3.26}  \frac{66.60}{6.60} \\ \frac{14}{14}  \frac{3.32}{3.22}  \frac{3.74}{3.42}  \frac{66.60}{6.60} \\ \frac{16}{14}  \frac{3.32}{3.22}  \frac{3.74}{3.42}  \frac{66.60}{6.60} \\ \frac{16}{16}  \frac{3.22}{3.22}  \frac{3.74}{3.42}  \frac{66.60}{6.60} \\ \frac{16}{16}  \frac{3.24}{3.22}  \frac{3.74}{3.42}  \frac{66.60}{6.60} \\ \frac{16}{16}  \frac{3.24}{3.22}  \frac{3.74}{3.42}  \frac{66.60}{6.60} \\ \frac{16}{16}  \frac{3.24}{3.2}  \frac{2.12}{3.4}  \frac{11.0}{3.4}  \frac{11.0}{3.4} \\ \frac{11.0}{3.4}  \frac{11.0}{3.4}  \frac{11.0}{3.4}  \frac{11.0}{3.4}  \frac{11.0}{3.4} \\ \frac{11.0}{4}  \frac{14.6}{3.64}  \frac{66.71}{6.671}  \frac{62.60}{6.66} \\ \frac{12.22}{6}  \frac{12.27}{1.4}  \frac{13.4}{3.4}  \frac{13.4}{3.4}  \frac{11.0}{1.6} \\ \frac{14.5}{6}  \frac{14.5}{6.64}  \frac{14.5}{6.64}  \frac{14.22}{6.200} \\ \frac{16}{6}  \frac{22.7}{6.65}  \frac{14.5}{7.14}  \frac{14.5}{6.2200} \\ \frac{16}{6}  \frac{22.6}{6.65}  \frac{14.5}{7.14}  \frac{14.5}{6.2200} \\ \frac{16}{6}  \frac{23.6}{6.65}  \frac{14.5}{7.14}  \frac{14.5}{6.2200} \\ \frac{16}{6}  \frac{23.6}{6.65}  \frac{16.6}{7.14}  \frac{12.22}{6.200} \\ \frac{16}{6}  \frac{23.6}{6.65}  \frac{16.6}{7.14}  \frac{16.22}{6.200} \\ \frac{16}{6}  \frac{23.6}{6.65}  \frac{16.6}{7.14}  \frac{16.6}{6.200} \\ \frac{16}{6}  \frac{23.6}{6.65}  \frac{16.6}{7.14}  \frac{16.6}{6.200} \\ \frac{16}{6}  \frac{23.6}{6.65}  \frac{16.6}{7.14}  \frac{16.6}{6.200} \\ \frac{16}{6}  \frac{23.6}{6.20}  \frac{16.2}{7.14}  \frac{16.6}{6.200} \\ \frac{16}{6}  \frac{23.6}{6.20}  \frac{16.6}{7.14}  \frac{16.6}{7.14} \\ \frac{16}{7.20}  \frac{16.2}{7.14}  \frac{16.6}{7.14}  \frac{16.6}{7.14}  \frac{16.6}{7.14} \\ \frac{16}{7.20}  \frac{16.2}{7.14}  \frac{16.6}{7.14}  \frac$			10	4.57	4.56	(4 5 0)
$\frac{12}{16} = \frac{3.97}{3.57} = \frac{3.57}{3.57} = \frac{16.01}{16}$ $\frac{12}{3.542} = \frac{3.57}{3.55} = \frac{16.01}{16}$ $\frac{12}{3.542} = \frac{3.57}{3.55} = \frac{16.01}{16}$ $\frac{11}{16} = \frac{3.42}{3.42} = \frac{3.42}{1.2} = \frac{10.01}{1.0}$ $\frac{1}{16} = \frac{10.5}{3.42} = \frac{1}{3.42} = \frac{10.01}{1.0}$ $\frac{1}{2} = \frac{12.2}{1.2} = \frac{11.2}{1.2} $			11	4.32	4.32	(6 4 0)
$\frac{14}{16} 3.55 3.55 (e^{3}.40) (e^{3}.60) $			12	3.97	3.90	(560)
$\frac{15}{2} 3.42 3.42 (0.20)$ $\frac{16}{2} 3.42 (0.20)$ $\frac{16}{2} 3.42 (0.20)$ $\frac{16}{2} 3.42 (0.20)$ $\frac{19}{2} 2.12 (0.10)$ $\frac{19}{2} 2.23 ($			14	3.55	3.55	(8 4 0)
$\frac{M_{x} at 370  ^{\circ}C}{2} \frac{1}{2} \frac{19.5}{62.38} \frac{-}{-} \frac{h}{h}$ 2b: $(m-C_{2}OPhO)_{8}PcCu$ $\frac{Col(P2m)}{a = 21.2 b = 17.3} \frac{121.2}{3} \frac{21.2}{13.4} \frac{17.3}{13.4} \frac{(11.0)}{13.4} \frac{13.4}{13.4} \frac{(11.0)}{11.0}$ $\frac{a = 21.2 b = 17.3}{4} \frac{8.64}{8.64} \frac{8.64}{6.64} \frac{(0.20)}{6}$ $\frac{ca = 5.10}{6} \frac{-}{-} \frac{#1}{41}$ 2c: $(m-C_{3}OPhO)_{8}PcCu$ $\frac{Col(P2m)}{a = 22.5 b = 18.5} \frac{122.7}{3} \frac{14.1}{14.3} \frac{14.3}{14.3} \frac{(11.0)}{14.3} \frac{12.2}{12.0} \frac{(0.00)}{6}$ $\frac{ca = 5.10}{5} \frac{14.1}{3} \frac{14.3}{14.3} \frac{(11.0)}{14.3} \frac{12.2}{10.0} \frac{(0.00)}{2} \frac{(0.00)}{6} ($			15	3.42	3.42	(0 8 0)
$ \begin{array}{c} \mbox{2b:} (m-C_2OPhO)_8 PcCu \\ \mbox{2b:} (m-C_2OPhO)_8 PcCu \\ \mbox{2b:} (m-C_3OPhO)_8 PcCu \\ \mbox{2b:} (m-C_5OPhO)_8 PcCu \\ \mbox{2b:} (m-C_5OPhO)$		M <sub>x</sub> at 370 °C	1 2	19.5 ca. 3.8	-	- h
$ \begin{array}{c} \textbf{Let} (m-C_2 O + nO)_{\text{B}} \text{ Colume 11, 0 = 10 } 0 \\ a = 21.2 \text{ b} = 17.3 \\ a = 22.5 \text{ b} = 18.5 \\ a = 22.6 \text{ b} = 20.3 \\ a = 23.6 \text{ b} = 20.3 \\ a = 21.4 \\ h = 3.41 \\ a = 9.10 \\ a = 21.4 \\ b = 3.41 \\ a = 31.4 \\ h = 3.41 \\ a = 3.4 \\ b = 22.1 \\ a = 21.4 \\ c = 1.0 \text{ for } \rho = 1.1 \\ c \text{ cal}, 422 \\ c = \frac{\pi 2}{22.1 \\ c = 10.5 \\ c \text{ cal}, 430 \\ c = \frac{\pi 2}{1.4 \\ c = 3.48 \\ c = \frac{\pi 4}{1.4 \\ c = 3.48 \\ c = \frac{\pi 4}{1.4 \\ c = 3.48 \\ c = \frac{\pi 4}{1.4 \\ c = 3.48 \\ c = \frac{\pi 4}{1.4 \\ c = 22.1 \\ c = 2.1 \\ c \text{ cal}, 422 \\ c = \frac{\pi 4}{1.4 \\ c = 2.1 \\ c = 2.0 \text{ for } \rho = 1.2 \\ c = \frac{\pi 4.8 \\ c = \frac{\pi 4}{1.4 \\ c = 2.0 \text{ for } \rho = 1.2 \\ c = \frac{\pi 4.8 \\ c = \frac{\pi 4}{1.4 \\ c = 2.0 \text{ for } \rho = 1.2 \\ c = 2.0 \text{ for } \rho = 1.2 \\ c = \frac{\pi 4.8 \\ c = \frac{\pi 4}{1.4 \\ c = 2.0 \text{ for } \rho = 1.2 \\ c = \frac{\pi 4.8 \\ c = \frac{\pi 4}{1.4 \\ c = 2.0 \\ c = 5.34 \\ c = \frac{\pi 4}{1.4 \\ c = 2.0 \\ c = 5.34 \\ c = \frac{\pi 4}{1.4 \\ c = 2.0 \\ c = 5.34 \\ c = \frac{\pi 4}{1.4 \\ c = 2.0 \\ c = 5.34 \\ c = \frac{\pi 4}{1.4 \\ c = 2.0 \\ c = 5.34 \\ c = \frac{\pi 4}{1.4 \\ c = 2.0 \\ c = 5.34 \\ c = \frac{\pi 4}{1.4 \\ c = 2.0 \\ c = 5.34 \\ c = \frac{\pi 4}{1.4 \\ c = 2.0 \\ c = 5.34 \\ c = \frac{\pi 4}{1.4 \\ c = 2.0 \\ c = 5.34 \\ c = \frac{\pi 4}{1.4 \\ c = 0 \\ c = 5.34 \\ c = \frac{\pi 4}{1.4 \\ c = 0 \\ c = 5.34 \\ c = \frac{\pi 4}{1.4 \\ c = 0 \\ c = 5.34 \\ c = \frac{\pi 4}{1.4 $		Col (P2m) at 200°C	1	21.2	21.2	(100)
$ \frac{4}{6} = \frac{8.64}{6} + \frac{8.64}{6} + \frac{6.2}{62.01} + \frac{6}{6} + \frac{6.71}{6.71} + \frac{6.71}{6.22.01} + \frac{6.2}{6} + \frac{6.71}{6.51} + \frac{6.71}{6.51} + \frac{6.2}{6.510} + \frac{6.71}{6.51} + \frac{6.2}{6.510} + \frac{6.71}{6.51} + \frac{6.2}{6.510} + \frac{6.71}{6.51} + \frac{6.2}{6.510} + \frac{6.71}{6.51} $	<b>26</b> . ( <i>III-C</i> 20F110)8FCCu	a = 21.2 b = 17.3	2	17.4 13.4	17.3 13.4	(0 1 0) (1 1 0)
$\frac{5}{6} = \frac{5.71}{225} = \frac{5.71}{7} = \frac{7.71}{7} = \frac{7.72}{7} = 7.$			4	8.64	8.64	(0 2 0)
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$			5	6.71 ca. 5.10	6.71	(2 2 0) #1
$ \begin{array}{c} 2 \text{Ce}: (m-\text{C}_3 \text{OP}\text{hO})_8 \text{PCCu} & \begin{array}{c} \text{Col}(P2m) \text{al } 285^\circ\text{C} & 2 & 18.5 & 18.5 & 0 & 10 \\ a = 22.5 \text{ b} = 18.5 & 3 & 14.1 & 14.3 & (110) \\ & 5 & 7.08 & 7.14 & (220) \\ & 6 & ca.5.06 & - & \#1 \\ \hline \\ 2 \text{d}: (m-\text{C}_4 \text{OP}\text{hO})_8 \text{PCCu} & \begin{array}{c} \text{Col}(P2m) \text{al } 210^\circ\text{C} & 1 & 23.6 & 23.6 & (10.0) \\ a = 23.6 \text{ b} = 20.3 & 3 & 94.3 & 94.3 & (120) \\ & a = 23.6 \text{ b} = 20.3 & 3 & 94.3 & 94.3 & (120) \\ & & & & & & & & & & & & & & & & & & $			1	22.7	22.5	(1 0 0)
$\frac{a - 22.30 - 16.3}{4} = \frac{3}{21.30} + \frac{1}{21.30} + \frac{1}{21.30} + \frac{1}{21.30} + \frac{1}{21.30} + \frac{1}{21.30} + \frac{1}{22.20} + \frac{1}{21.30} + \frac{1}{22.20} + 1$	2 <b>c</b> : ( <i>m</i> -C <sub>3</sub> OPhO) <sub>8</sub> PcCu	Col <sub>r</sub> (P2m) at 265°C	2	18.5	18.5	(0 1 0)
$\frac{5}{6}  \frac{708}{ca.506}  \frac{7.14}{ca.506}  \frac{(22.0)}{ca.506} \\ \frac{6}{ca.506}  \frac{7.14}{ca.506}  \frac{(22.0)}{ca.506} \\ \frac{7.14}{ca.506}  \frac{(22.0)}{ca.506} \\ \frac{7.14}{ca.506}  \frac{(22.0)}{ca.506} \\ \frac{7.14}{ca.506}  \frac{7.14}{ca.506}  \frac{(22.0)}{ca.506} \\ \frac{7.14}{ca.506}  \frac{7.14}{ca.506}  \frac{(22.0)}{ca.506} \\ \frac{7.14}{ca.506}  \frac{7.14}{ca.506}  \frac{(10.0)}{ca.506} \\ \frac{7.14}{ca.506}  \frac{7.14}{ca.506}  \frac{(10.0)}{ca.506} \\ \frac{7.14}{ca.506}  \frac{7.14}{ca.506}  \frac{7.14}{ca.506} \\ \frac{7.14}{ca.506}  \frac{7.14}{ca.506}  \frac{7.14}{ca.506} \\ \frac{7.14}{ca.506}  \frac{7.14}{ca.506}  \frac{7.14}{ca.506}  \frac{7.14}{ca.506} \\ \frac{7.14}{ca.506}  \frac{7.14}{ca.506}  \frac{7.14}{ca.506} \\ \frac{7.14}{ca.506}  \frac{7.14}{ca.506}  \frac{7.14}{ca.506}  \frac{7.14}{ca.506}  \frac{7.14}{ca.506} \\ \frac{7.14}{ca.506}  7.14$		a – 22.5 D – 10.5	3 4	14.1 9.10	14.3 9.22	(1 1 0) (0 2 0)
$\frac{6}{24.00} = \frac{6}{24.00} + \frac{1}{22.0} + \frac$			5	7.08	7.14	(2 2 0)
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $			6	ca. 5.06	-	#1
a = 23.6 b = 20.3 $a = 23.6 b = 20.3$ $a = 27.2$ $a = 31.4$ $a = 3.41$ $a = 9.10$ $a = 34.4$ $a = 9.10$ $a = 34.4$ $a = 9.10$ $a = 44.82$ $a = 24.8 b = 22.1$ $a = 47.6 b = 36.3$ $a = 47.8 b = 35.3$ $a = 6.22$ $a = 47.8 b = 35.3$ $a = 6.22$ $a = 47.4 b = 36.3$ $a = 47.8 b = 35.3$ $a = 6.22$ $a = 6.32$ $a = 47.8 b = 35.3$ $a = 6.32$ $a = 47.8 b = 35.3$ $a = 6.32$ $a = 47.8 b = 35.3$ $a = 6.32$ $a = 47.8 b = 35.3$ $a = 6.30$ $a = 47.4 b = 35.3$ $a = 6.30$ $a = 5.4 4$	2d: ( <i>m</i> -C₄OPhO) <sub>8</sub> PcCu	Col <sub>r</sub> (P2m) at 210°C	1	23.6	23.6 20.3	(100)
$\frac{4}{5}  \begin{array}{c} 7.67 \\ 6.2.490 \\ \hline 5 \\ ca.4.90 \\ \hline \\ $		a = 23.6 b = 20.3	3	9.43	9.43	(1 2 0)
$\begin{array}{c c c c c c c c c c c c c c c c c c c $			4	7.67 ca 4.90	7.70	(2 2 0) #1
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $		Col. at 150%C	1	27.2	27.2	(1 0 0)
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		a = 31.4	2	16.2	15.7	(1 1 0)
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		h = 3.41	3	9.10	9.06	(120)
$\frac{\text{Col}_{i}(\text{P2m}) \text{ at } 210^{\circ}\text{C}}{\text{a} = 24.8 \text{ b} = 22.1} \\ \frac{\text{Col}_{i}(\text{P2m}) \text{ at } 210^{\circ}\text{C}}{\text{a} = 24.8 \text{ b} = 22.1} \\ \frac{\text{Col}_{i}(\text{P2m}) \text{ at } 210^{\circ}\text{C}}{\text{a} = 24.8 \text{ b} = 22.1} \\ \frac{\text{Col}_{i}(\text{P2m}) \text{ at } 210^{\circ}\text{C}}{\text{a} = 24.8 \text{ b} = 22.1} \\ \frac{\text{Col}_{i}(\text{P2m}) \text{ at } 178^{\circ}\text{C}}{\text{a} = 47.6 \text{ b} = 36.3} \\ \frac{\text{Col}_{i}(\text{P2m}) \text{ at } 178^{\circ}\text{C}}{\text{a} = 47.6 \text{ b} = 36.3} \\ \frac{\text{Col}_{i}(\text{P2m}) \text{ at } 178^{\circ}\text{C}}{\text{a} = 47.6 \text{ b} = 36.3} \\ \frac{\text{Col}_{i}(\text{P2m}) \text{ at } 178^{\circ}\text{C}}{\text{a} = 47.6 \text{ b} = 36.3} \\ \frac{\text{Col}_{i}(\text{P2m}) \text{ at } 178^{\circ}\text{C}}{\text{a} = 47.6 \text{ b} = 36.3} \\ \frac{\text{Col}_{i}(\text{P2m}) \text{ at } 178^{\circ}\text{C}}{\text{a} = 47.6 \text{ b} = 36.3} \\ \frac{\text{Col}_{i}(\text{P2m}) \text{ at } 178^{\circ}\text{C}}{\text{a} = 47.6 \text{ b} = 36.3} \\ \frac{\text{Col}_{i}(\text{P2m}) \text{ at } 178^{\circ}\text{C}}{\text{a} = 47.6 \text{ b} = 36.3} \\ \frac{\text{Col}_{i}(\text{P2m}) \text{ at } 178^{\circ}\text{C}}{\text{a} = 47.6 \text{ b} = 36.3} \\ \frac{\text{Col}_{i}(\text{P2m}) \text{ at } 178^{\circ}\text{C}}{\text{a} = 47.8 \text{ b} = 35.3} \\ \frac{\text{Col}_{i}(\text{P2m}) \text{ at } 203^{\circ}\text{C}}{\text{a} = 47.8 \text{ b} = 35.3} \\ \frac{\text{Col}_{i}(\text{P2m}) \text{ at } 203^{\circ}\text{C}}{\text{a} = 47.8 \text{ b} = 35.3} \\ \frac{\text{Col}_{i}(\text{P2m}) \text{ at } 203^{\circ}\text{C}}{\text{a} = 47.8 \text{ b} = 35.3} \\ \frac{\text{Col}_{i}(\text{P2m}) \text{ at } 203^{\circ}\text{C}}{\text{a} = 47.8 \text{ b} = 35.3} \\ \frac{\text{Col}_{i}(\text{P2m}) \text{ at } 203^{\circ}\text{C}}{\text{a} = 47.8 \text{ b} = 35.3} \\ \frac{\text{Col}_{i}(\text{P2m}) \text{ at } 203^{\circ}\text{C}}{\text{a} = 47.8 \text{ b} = 35.3} \\ \frac{\text{Col}_{i}(\text{P2m}) \text{ at } 203^{\circ}\text{C}}{\text{a} = 47.8 \text{ b} = 35.3} \\ \frac{\text{Col}_{i}(\text{P2m}) \text{ at } 203^{\circ}\text{C}}{\text{a} = 47.8 \text{ b} = 35.3} \\ \frac{\text{Col}_{i}(\text{c}(\text{P2m}) \text{ at } 203^{\circ}\text{C}}{\text{a} = 47.8 \text{ b} = 35.3} \\ \frac{\text{Col}_{i}(\text{c}(\text{P2m}) \text{ at } 203^{\circ}\text{C}}{\text{a} = 47.8 \text{ b} = 35.3} \\ \frac{\text{Col}_{i}(\text{c}(\text{C}) \text{ at } 13.8 \text{ c} 33.0 \text{ c} 14.8 \\ \frac{\text{Col}_{i}(\text{c}(\text{c}) \text{ c} 14.0 \text{ c}$		Z = 1.0 for $\rho$ = 1.1	5	ca. 4.82	-	`#2´
$\frac{\text{Col}_{(P2m)} \text{at } 210^{\circ}\text{C}}{\text{a} = 24.8 \text{ b} = 22.1} 22.1 (22.1) (0 1 0)}{\text{a} = 24.8 \text{ b} = 22.1} 39.95 (10.1) (12.0) (12$				3.41		(1 0 0)
$\frac{a = 24.8 \text{ b} = 22.1}{4} 3 \frac{9.95}{8.38} \frac{10.1}{8.27} \frac{(12.0)}{(22.0)} \frac{4}{5} \frac{8.38}{6.38} \frac{8.27}{6.7} \frac{(22.0)}{(22.0)} \frac{1}{5} \frac{28.9}{6.4.87} \frac{28.1}{10} \frac{(11.0)}{10} \frac{10.1}{1} 10.1$		Col <sub>r</sub> (P2m) at 210°C	2	24.8	24.0	(0 1 0)
$\frac{4}{5}  \frac{6.27}{ca.4.87}  \frac{6.27}{c}  \frac{(22.0)}{5} \\ \frac{5}{ca.4.87}  \frac{6.27}{c}  \frac{(22.0)}{c} \\ \frac{5}{ca.4.87}  \frac{6.27}{c}  \frac{6.25}{ca.4.87} \\ \frac{6.25}{ca.4.87}  \frac{6.25}{ca.4.87} \\ \frac{6.25}{ca.5.8}  \frac{6.25}{ca.5.8} \\ 6$		a = 24.8 b = 22.1	3	9.95	10.1	(1 2 0)
$\begin{array}{c c c c c c c c c c c c c c c c c c c $			4 5	ca. 4.87	-	(2 2 0) #1
<b>2f:</b> $(m-C_6OPhO)_8PcCu$ a = 47.6 b = 36.3 b = 3.50 $Z = 2.0 \text{ for } \rho = 1.2$ <b>2</b> <b>3</b> <b>4</b> <b>10.4</b> <b>10.4</b> <b>10.4</b> <b>10.4</b> <b>10.4</b> <b>10.4</b> <b>10.4</b> <b>10.4</b> <b>10.4</b> <b>10.4</b> <b>10.4</b> <b>10.4</b> <b>10.5</b> <b>10.5</b> <b>10.5</b> <b>10.5</b> <b>10.5</b> <b>10.5</b> <b>10.5</b> <b>10.5</b> <b>10.5</b> <b>10.5</b> <b>10.5</b> <b>10.5</b> <b>10.5</b> <b>10.5</b> <b>10.5</b> <b>10.5</b> <b>10.6</b> <b>10.5</b> <b>10.6</b> <b>10.5</b> <b>10.6</b> <b>10.5</b> <b>10.6</b> <b>10.5</b> <b>10.6</b> <b>10.5</b> <b>10.6</b> <b>10.5</b> <b>10.6</b> <b>10.5</b> <b>10.6</b> <b>10.5</b> <b>10.6</b> <b>10.5</b> <b>10.6</b> <b>10.5</b> <b>10.6</b> <b>10.6</b> <b>10.5</b> <b>10.6</b> <b>10.6</b> <b>10.5</b> <b>10.6</b> <b>10.6</b> <b>10.5</b> <b>10.6</b> <b>10.6</b> <b>10.5</b> <b>10.6</b> <b>10.6</b> <b>10.5</b> <b>10.6</b> <b>10.6</b> <b>10.5</b> <b>10.6</b> <b>10.6</b> <b>10.5</b> <b>10.6</b> <b>10.6</b> <b>10.5</b> <b>10.6</b> <b>10.6</b> <b>10.5</b> <b>10.6</b> <b>10.6</b> <b>10.5</b> <b>10.6</b> <b>10.6</b> <b>10.5</b> <b>10.6</b> <b>10.6</b> <b>10.5</b> <b>10.6</b> <b>10.6</b> <b>10.5</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.6</b> <b>10.7</b> <b>10.7</b> <b>10.6</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b> <b>10.7</b>			1	28.9	28.1	(1 1 0)
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	2f: ( <i>m</i> -C <sub>6</sub> OPhO) <sub>8</sub> PcCu	$col_{ro1}(P2_1/a)$ at 178°C a = 47.6 b = 36.3	2	23.8	23.8	(200)
$Z = 2.0 \text{ for } \rho = 1.2$ $S = 2.0 \text{ for } \rho = 1.2$ $F = 2.0 \text{ for } \rho $		h = 3.50	3	17.3 10.4	17.4	(0 2 0) (2 3 0)
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		Z = 2.0 for $\rho$ = 1.2	5	9.47	9.53	(3 3 0)
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$			6 7	8.59 7.38	8.54 7.36	(1 4 0) (5 3 0)
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$			8	6.22	6.34	(7 2 0)
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$			9 10	<i>ca</i> . 5.08 3.50	-	#1 <i>h</i>
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		Col (P2 /a) at 2020C	1	28.8	28.4	(1 1 0)
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$		a = 47.8 b = 35.3	2	24.2 10 5	23.9 10.6	(200)
$Z = 2.0 \text{ for } \rho = 1.2$ $5$ $6$ $7.45$ $7.42$ $6.76$ $6.77$ $(1 4 0)$ $7$ $6.76$ $6.77$ $(2 5 0)$ $8$ $6.30$ $6.45$ $(3 5 0)$ $9$ $ca.5.34$ $-$ $#1$ $10$ $4.70$ $4.73$ $(6 6 0)$ $11$ $3.82$ $3.81$ $-$ $12$ $3.51$ $-$ $h$		h = 3.51	4	9.49	9.46	(3 3 0)
$\begin{array}{cccccccccccccccccccccccccccccccccccc$		Z = 2.0 for $\rho$ = 1.2	5	8.61	8.67	(1 4 0)
$\begin{array}{cccccccccccccccccccccccccccccccccccc$			7	6.76	6.77	(250)
$\begin{array}{cccccccccccccccccccccccccccccccccccc$			8	6.30	6.45	(3 5 0)
$\begin{array}{cccccccccccccccccccccccccccccccccccc$			9 10	ca. 5.34 4.70	4.73	(660)
12   3.51 - h			11	3.82	3.81	-
			13	3.51 3.23	3.23	n 

#### Table S1. X-ray data of 2a-o.

## Table S1. (Continued).

<b>2f</b> : ( <i>m</i> -C <sub>6</sub> OPhO) <sub>8</sub> PcCu	Col <sub>ho1</sub> at 31ºC a = 32.4	1 2 3	28.0 16.2 10.4	28.0 16.2 10.6	(1 0 0) (1 1 0) (1 2 0)
	h = 3.34 Z = 1.0 for $\rho$ = 1.2	4 5 6 7	9.31 ca. 4.67 3.99 3.34	9.35 - 4.01 -	(3 0 0) #2 (3 5 0) h
	$Col_{ho2}$ at 100°C a = 32.9 h = 3.38 Z = 1.0 for $a = 1.1$	1 2 3 4 5	28.5 16.5 10.6 9.37 ca. 4.79	28.5 16.4 10.8 9.49	(1 0 0) (1 1 0) (1 2 0) (3 0 0) #2
	Col <sub>ho3</sub> at 155°C a = 32.9	6 1 2 3	3.38 28.5 17.5 10.7	- 28.5 16.5 10.8	h (1 0 0) (1 1 0) (1 2 0)
	h = 3.42 Z = 1.0 for $\rho = 1.1$	4 5	ca. 4.84 3.42	- -	#2 h
	$col_{ho4}$ at 190°C a = 30.9 h = 3.61 Z = 1.0 for $\rho$ = 1.2	1 2 3 4	26.7 9.92 ca. 4.85 3.61	26.7 10.1 - -	(1 0 0) (1 2 0) #2 h
<b>2g</b> : ( <i>m</i> -C <sub>7</sub> OPhO) <sub>8</sub> PcCu	Col <sub>ro</sub> (P2 <sub>1</sub> /a) at 150°C a = 48.6 b = 36.1 h = 3.48 Z = 2.0 for $\rho$ = 1.2	1 2 3 4 5 6 7 8 9 10 11	29.8 24.0 16.8 10.7 9.70 8.79 7.63 <i>ca.</i> 5.14 3.77 3.48 3.20	29.0 24.3 16.9 10.8 9.66 8.86 7.56 - - - -	(1 1 0) (2 0 0) (1 2 0) (2 3 0) (3 3 0) (1 4 0) (5 3 0) #1 <i>h</i>
	Col <sub>ho1</sub> at r.t. a = 33.7 h = 3.34 Z = 1.0 for $\rho$ = 1.1	1 2 3 4 5 6 7	29.2 16.7 11.0 9.69 7.55 <i>ca.</i> 4.69 3.34	29.2 16.8 11.0 9.72 7.29	(1 0 0) (1 1 0) (1 2 0) (3 0 0) (4 0 0) #2 h
	Col <sub>ho2</sub> at 179°C a = 34.7 h = 3.45 Z = 1.0 for $\rho$ = 1.0	1 2 3 4 5	30.1 18.3 11.2 ca. 4.86 3.45	30.1 17.4 11.4 - -	(1 0 0) (1 1 0) (1 2 0) #2 h
	$Col_{ho3}$ at 201.5°C a = 33.0 h = 3.53 Z = 1.0 for $\rho$ = 1.1	1 2 3 4	28.6 10.7 ca. 4.89 3.53	28.6 10.8 -	(1 0 0) (1 2 0) #2 h
<b>2h</b> : ( <i>m</i> -C <sub>8</sub> OPhO) <sub>8</sub> PcCu	Col <sub>ho1</sub> at 101°C a = 35.8 h = 3.38 Z = 1.0 for $\rho$ = 1.0	1 2 3 4 5	31.0 17.4 11.5 ca. 4.74 3.38	31.0 17.9 11.7 -	(1 0 0) (1 1 0) (1 2 0) #2 h
	Col <sub>ro</sub> (P2 <sub>1</sub> /a) at 158°C a = 49.3 b = 38.1 h = 3.48 Z = 2.0 for $\rho$ = 1.2	1 2 3 4 5 6 7 8 9	31.0 25.0 17.4 11.2 10.0 7.83 6.55 ca. 5.13 3.48	30.1 24.7 17.8 11.3 10.0 7.80 6.61	(1 1 0) (2 0 0) (1 2 0) (2 3 0) (3 3 0) (5 3 0) (7 2 0) #1 h
	$Col_{ho2}$ at 135°C a = 35.9 h = 3.40 Z = 1.0 for $\rho$ = 1.0	1 2 3 4 5	31.1 17.7 11.4 ca. 4.76 3.40	31.1 17.9 11.7 -	(1 0 0) (1 1 0) (1 2 0) #2 h
	Col <sub>ho3</sub> at 175°C a = 35.9 h = 3.44 Z = 1.0 for $\rho$ = 1.0	1 2 3 4 5	31.1 18.1 11.5 ca. 4.78 3.44	31.1 17.9 11.7 -	(1 0 0) (1 1 0) (1 2 0) #2 h

## Table S1. (Continued).

<b>2i</b> : ( <i>m</i> -C <sub>9</sub> OPhO) <sub>8</sub> PcCu	$Col_{ho1}$ at 35 °C a = 36.3 h = 3.33 Z = 1.0 for $\rho$ = 1.1	1 2 3 4 5 6 7	31.4 17.1 11.7 10.2 7.87 ca. 4.60 3.33	31.4 18.1 11.9 10.5 7.86	(1 0 0) (1 1 0) (1 2 0) (3 0 0) (4 0 0) #2
	Col <sub>ho2</sub> at 180 °C a = 36.7 h = 3.45 Z = 1.0 for $\rho$ = 1.0	1 2 3 4 5	31.8 18.9 11.9 <i>ca.</i> 4.83 3.45	31.8 18.3 12.0 -	(1 0 0) (1 1 0) (1 2 0) #2 h
	Col <sub>ro</sub> (P2 <sub>1</sub> /a) at 180°C a = 49.8 b = 39.6 h = 3.48 Z = 2.0 for $\rho = 1.2$	1 2 3 4 5 6 7 8 9 10	31.7 25.2 18.7 11.7 10.2 8.03 ca 5.16 3.79 3.48 3.19	31.0 24.9 18.4 11.7 10.3 7.95 - - -	(1 1 0) (2 0 0) (1 2 0) (3 3 0) (5 3 0) #1 h
<b>2j</b> : ( <i>m</i> -C <sub>10</sub> OPhO) <sub>8</sub> PcCu <sup>∏</sup>	Col <sub>hd</sub> at virgin r.t. a = 34.4 $h = 3.5^{11}$ Z = ca. 1 for $\rho$ = 1.0	1 2 3 4 5 6	29.8 17.1 11.2 8.4 6.7 ca. 4.4	29.8 17.1 11.3 8.3 6.8	(1 0 0) (1 1 0) (1 2 0) (1 3 0) (2 3 0) #2
	Col <sub>ho</sub> at nonvirgin r.t. a = 34.4 h = 3.32 $Z = ca. 1$ for $\rho = 1.0$	1 2 3 4 5 6 7	29.8 17.1 11.2 8.4 6.7 ca. 4.4 3.32	29.6 17.1 11.3 8.3 6.8 -	(1 0 0) (1 1 0) (1 2 0) (1 3 0) (2 3 0) #2 (0 0 1)
<b>2k</b> : ( <i>m</i> -C <sub>12</sub> OPhO) <sub>8</sub> PcCu <sup>ïii</sup>	Col <sub>hd</sub> at virgin r.t. a = 38.6 $h = 3.5^{11}$ Z = ca. 1 for $\rho$ = 1.0	1 2 3 4 5 6 7	33.4 19.4 17.0 12.8 11.0 9.02 ca. 4.5	33.4 19.3 16.7 12.7 10.8 9.00	(1 0 0) (1 1 0) (2 0 0) (2 1 0) (3 0 0) (3 1 0) #2
	Col <sub>ho</sub> at nonvirgin r.t. a = 37.5 h = 3.33 Z = ca. 1 for $\rho$ = 1.0	1 2 3 4 5 6 7 8	32.4 19.0 16.4 12.4 11.3 9.48 ca. 4.5 3.33	32.4 18.8 16.3 12.3 11.1 9.65	(1 0 0) (1 1 0) (2 0 0) (2 1 0) (3 0 0) (3 1 0) #2 (0 0 1)
<b>2I</b> : ( <i>m</i> -C <sub>14</sub> OPhO) <sub>8</sub> PcCu <sup>Ⅲ</sup>	Col <sub>hd</sub> at virgin r.t. a = 41.1 $h = 3.5^{\text{II}}$ Z = ca. 1 for $\rho$ = 1.0	1 2 3 4 5	35.6 20.6 18.0 13.5 <i>ca.</i> 4.5	35.6 20.6 17.8 13.5	(1 0 0) (1 1 0) (2 0 0) (2 1 0) #2
	Col <sub>ho</sub> at nonvirgin r.t. a = 40.0 h = 3.33 Z = ca. 1 for $\rho$ = 1.0	1 2 3 4 5	34.6 20.2 17.4 ca. 4.4 3.33	34.6 20.0 17.3	(1 0 0) (1 1 0) (2 0 0) #2 (0 0 1)
<b>2m</b> : ( <i>m</i> -C <sub>16</sub> OPhO) <sub>8</sub> PcCu <sup>ĬĬ</sup>	$Col_{ho}$ at 50°C a = 39.8 h = 3.36 Z = ca. 1 for $\rho$ = 1.0	1 2 3 4 5	34.5 20.4 18.0 ca. 4.5 3.36	34.5 19.9 17.2 -	(1 0 0) (1 1 0) (2 1 0) #2 (0 0 1)
<b>2n</b> : ( <i>m</i> -C <sub>18</sub> OPhO) <sub>8</sub> PcCu <sup>∏</sup>	$Col_{ho}$ at 90°C a = 42.5 h = 3.36 Z = ca. 1 for $\rho$ = 1.0	1 2 3 4 5	36.8 22.1 18.9 ca. 4.5 3.36	36.8 21.2 18.4 -	(1 0 0) (1 1 0) (2 0 0) #2 (0 0 1)
<b>20</b> : ( <i>m</i> -C <sub>20</sub> OPhO) <sub>8</sub> PcCu <sup>ïĭ</sup>	Col <sub>ho</sub> at 100°C a = 41.4 h = 3.35 Z = ca. 1 for $\rho$ = 1.0	1 2 3 4 5	35.9 22.4 18.9 <i>ca.</i> 4.6 3.35	35.9 22.4 18.9	(1 0 0) (1 1 0) (2 0 0) #2 (0 0 1)

*h*: Stacking distance = (0 0 1), #2: halos due to the molten alkyl groups,  $\rho$ : Assumed density (g/cm<sup>3</sup>) and ¶: Assumed value. <sup>II</sup>: Ref [21], <sup>III</sup>: Ref [20].



**Fig. S3**. Schematic free energy versus temperature (G-T) diagram of  $(m-C_8OPhO)_8PcCu$  (**2h**). On the 1<sup>st</sup> heating stage indicating small open arrows: when the virgin sample is heated from rt, an unidentifiable X<sub>1v</sub> phase transforms into another unidentifiable X<sub>2</sub> phase at 40.4 °C of the intersection; the X<sub>2</sub> phase transforms into Col<sub>ho1</sub> phase at 83.4 °C and then into Col<sub>ro</sub>(P2<sub>1</sub>/a) phase at 118.9 °C. On further heating, it clears into I.L. at 197.2 °C. On the 1<sup>st</sup> cooling stage indicating black arrows: when the IL over 210 °C is cooled, it transforms into Col<sub>ho3</sub> phase at 200.4 °C of the intersection and then into Col<sub>ho2</sub> at 170.9 °C. On the 2<sup>nd</sup> heating stage indicating long open arrows: when the Col<sub>ho2</sub> the Col<sub>ho2</sub> at 170.9 °C. On the 2<sup>nd</sup> heating stage indicating long open arrows: when the Col<sub>ho2</sub> the clearing point without transforming into Col<sub>ho3</sub>. These complicated phase transition behaviour can rationally explain the DSC thermograms illustrated in Fig. S1, by using the G-T diagram. The phase appearance greatly depends on the thermal history and heating and cooling rates. Only when the supercooled Col<sub>ho3</sub> was held at 165.0 °C for long hours, the Col<sub>ro</sub> phase partially appeared in Col<sub>ho3</sub> with Col<sub>ho2</sub>, as shown in Fig. S2 Photo (H). At the present time, we cannot explain it by this G-T diagram. Further study is necessary.