Supporting Information

Printed Large-area Photovoltaic Modules based on Small-molecules with Different Alkyl Terminal Chains

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Table S1. Photovoltaic parameter of slot-die coated solar cells with different amount of DIO additives

Small molecule	Volume of additive (DIO)	V_{oc} (V)	J_{sc} (mA cm^{-2})	FF	PCE(%)
LGC-D073	0%	0.89	9.2	38.3	3.13(2.96)
	3%	0.84	9.7	59.6	4.93(4.48)
	6%	0.85	9.8	61.9	5.17(5.08)
	9%	0.84	11.3	62	5.82(5.56)
	12%	0.81	9.64	62	4.84(4.70)
LGC-D023	0%	0.86	6.61	51.7	2.95(2.72)
	3%	0.85	9.49	65.7	5.33(5.10)
	6%	0.85	8.27	58.9	4.13(3.95)
	9%	0.86	7.74	58.4	3.93(3.60)
	12%	0.88	4.74	52.3	2.17(2.05)

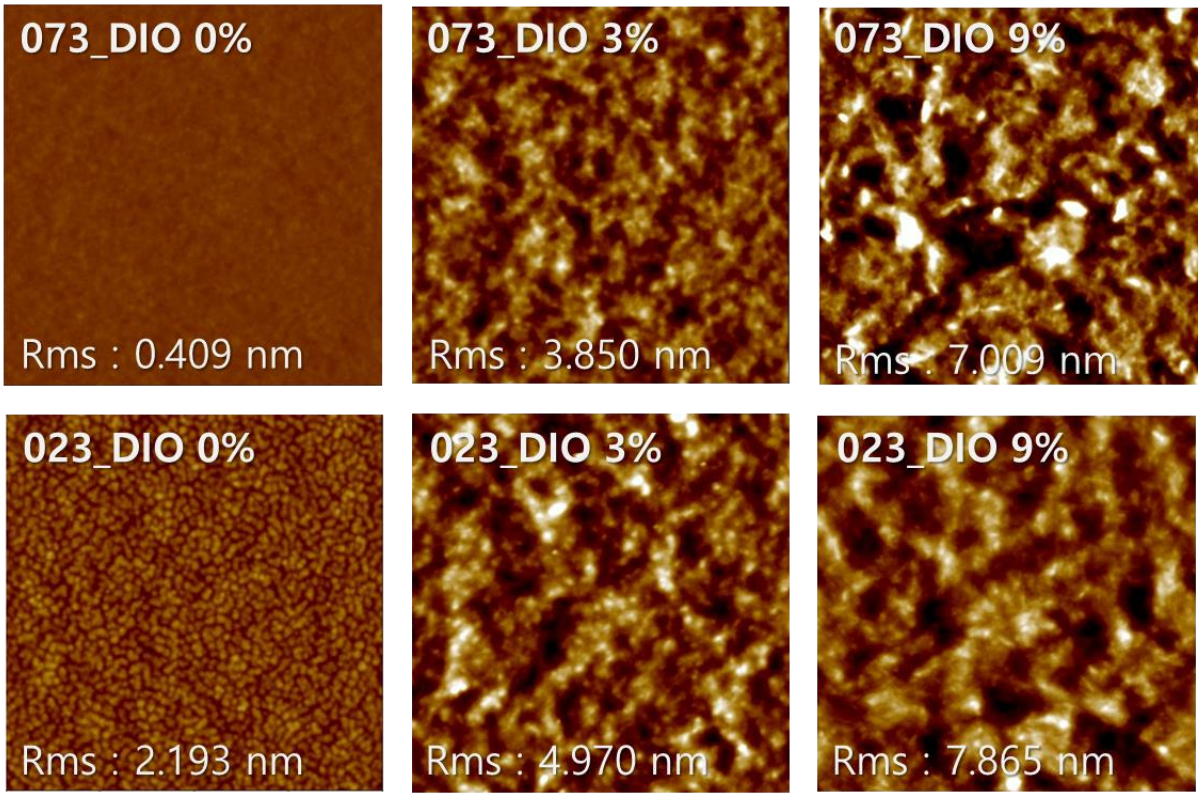

Figure S1. AFM images of slot-die coated thin films.

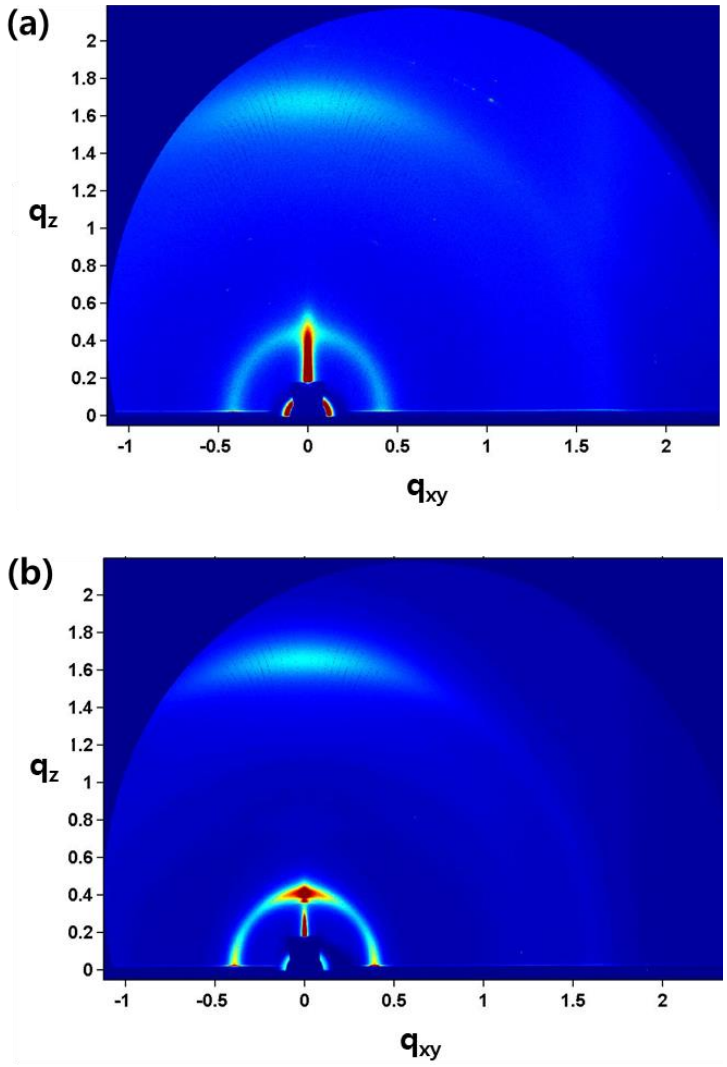

Figure S2. 2D GIXD patterns for pure films of (a) LGC-073 and (b) LGC-023 small molecules.

Table S2. Crystallographic information of slot-die coated thin films based on the small molecules

			Out of plane	In plane	
			(100)	(100)	(010)
LGC-D073	DIO 0%	Q ($Å^{-1}$)	-	0.51	-
		D-spacing (Å)	-	12.31	-
	DIO 3%	Q ($Å^{-1}$)	0.44	0.41	1.66
		D-spacing (Å)	14.27	15.32	3.78
	DIO 9%	Q ($Å^{-1}$)	0.42	0.40	1.60
		D-spacing (Å)	14.95	15.70	3.92
LGC-D023	DIO 0%	Q ($Å^{-1}$)	0.39	0.39	1.64
		D-spacing (Å)	16.11	16.11	3.83
	DIO 3%	Q ($Å^{-1}$)	0.38	0.36	1.60
		D-spacing (Å)	16.53	17.45	3.92
	DIO 9%	Q ($Å^{-1}$)	0.37	0.36	1.60
		D-spacing (Å)	16.98	17.45	3.92

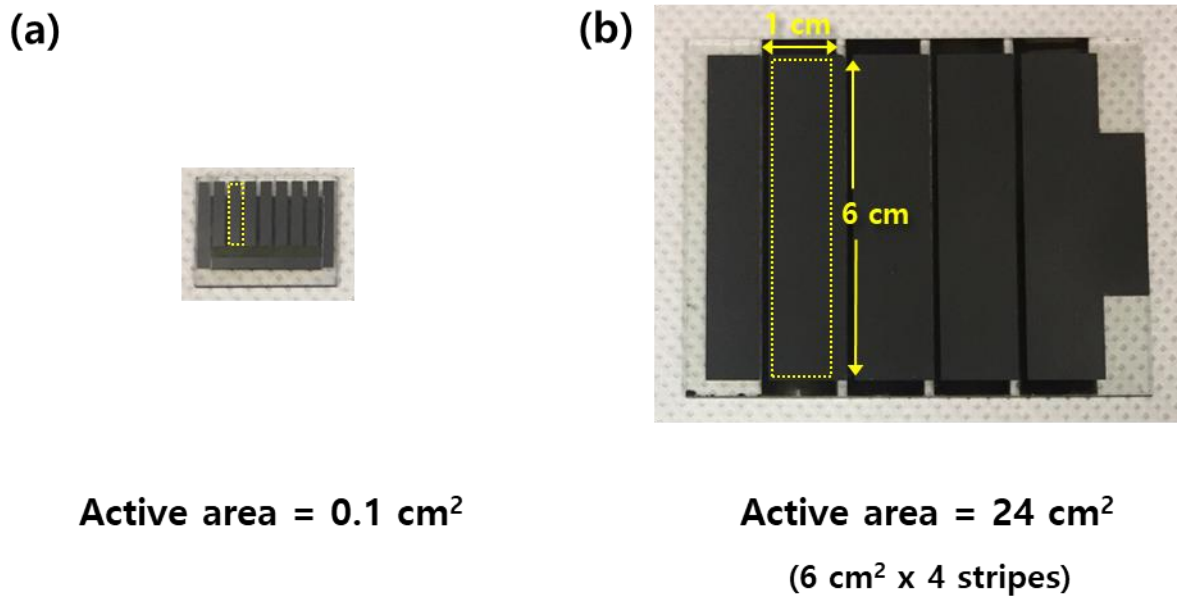

Figure S3. Photographic of (a) small-area single-cell and (b) large-area photovoltaic modules. The geometrical FF of large-area photovoltaic modules is calculated to be 50%. (The geometrical FF is percentage of the active area of 24 cm^2 divided by substrate area of 48 cm^2.)

Table S3. Photovoltaic parameters of slot-die printed large-area modules

Photovoltaic modules	V_{oc} (V)	J_{sc} (mA cm^{-2})	FF	PCE(%)
LGC-D073	3.30(3.11)	3.10(2.72)	54(48.50)	5.50(4.17)
LGC-D023	3.47(3.33)	2.28(2.10)	57(55.06)	4.53(3.90)

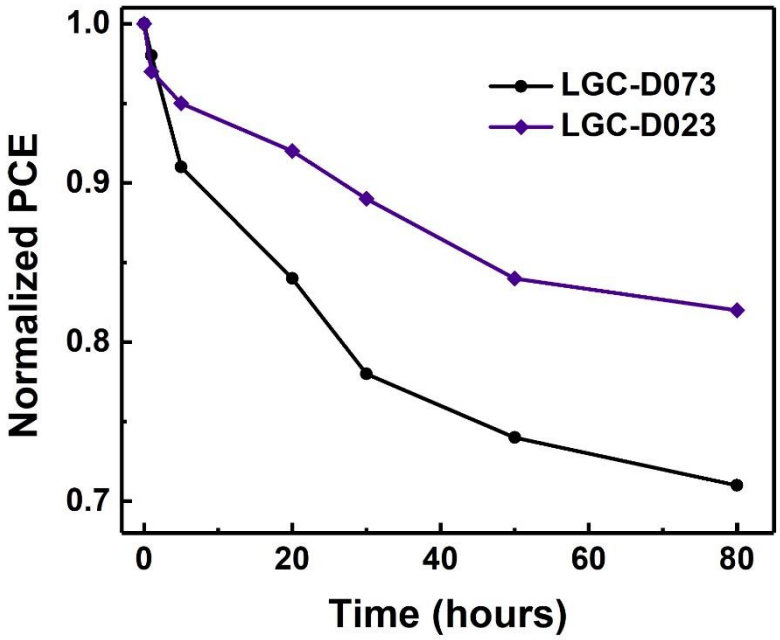

Figure S4. Normalized power conversion efficiency of slot-die coated devices as a function of storage time in N_2 atmosphere. The relative lower stability of LGC-D073 will be attributed to the higher volume of DIO additive.

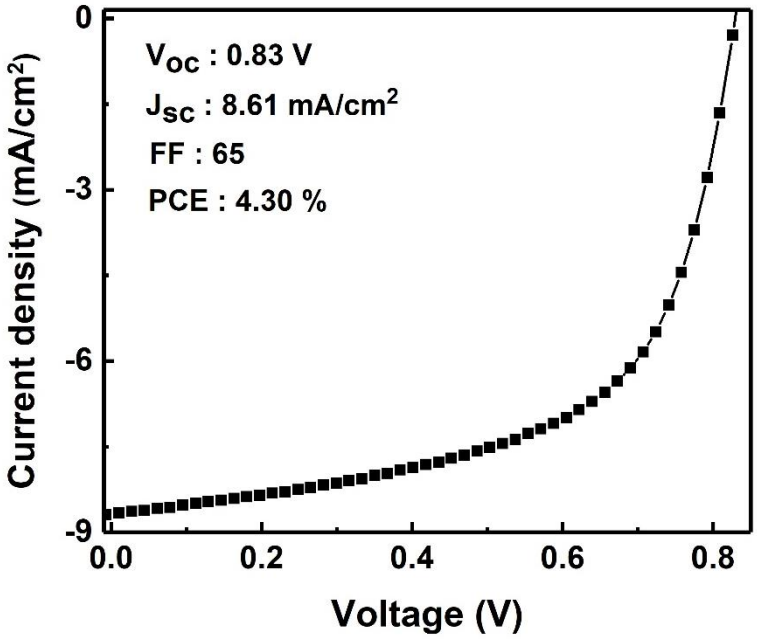

Figure S5. The J-V curves of slot-die coated devices processed from non-halogenated solvent, xylene. Due to the better solubility of LGC-D023, we just tried to fabricate the solar cells by using the only LGC-D023. The quite low efficiency of slot-die coated solar cells will be attributed to the relatively poor solubility for xylen**e** compared to the chlorobenzene.