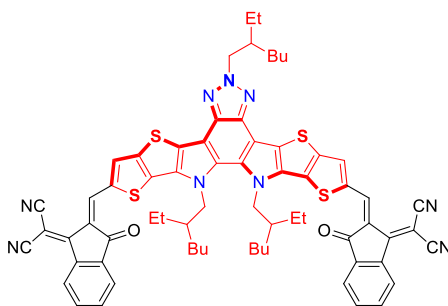


## Certificate of Analysis

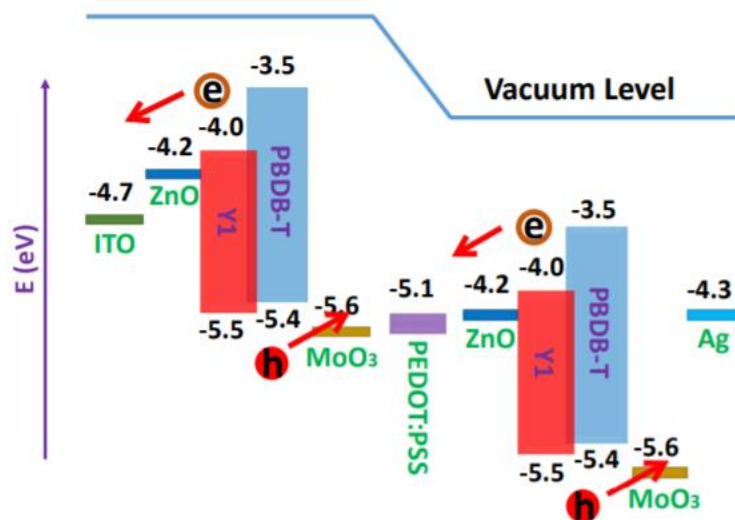
Common Name:	Y1
1M Code:	OS1166
CAS:	NA
Chemical Formula:	C <sub>68</sub> H <sub>63</sub> N <sub>9</sub> O <sub>2</sub> S <sub>4</sub>
Molecular Weight:	1166.55
Chemical Name:	2,2'-((2Z,2'Z)-((6,12,13-tris(2-ethylhexyl)-12,13-dihydro-6H-thieno[2'',3'':4', 5'']thieno[2',3':4,5]pyrrolo[3,2-g]thieno[2',3':4,5]thieno[3,2-b][1,2,3]triazolo-[4,5-e ]indole-2,10-diyl)bis(methanylylidene))bis(3-oxo-2,3-dihydro-1H-indene-2,1- diylidene))dimalononitrile

### Chemical Structure



Lot#	DW5258S
Appearance:	Brown solid
Solubility:	Soluble CHCl <sub>3</sub> , and selected organic solvent
NMR:	Confirmed
Assay:	99+%

Application: Electron acceptor: HOMO=-5.5eV LUMO= -4.0eV  
 Reference: ACS Energy Lett. 2019, 4, 1535–1540  
 Nat. Commun. 2019, 10 (1), 570.



Energy level diagram of tandem OPVs during working condition.

**Table 1.** Optical and electrochemical properties of Y1 and Y2

	Absorption spectra				Cyclic voltammetry		
	Sol <sup>a</sup>		Film <sup>b</sup>		<i>p</i> -doping	<i>n</i> -doping	
	$\lambda_{\max}$	$\lambda_{\max}$	$\lambda_{\text{onset}}$	$E_g^{\text{opt c}}$	$E_{\text{on}}^{\text{ox}}/\text{HOMO}^{\text{d}}$	$E_{\text{on}}^{\text{red}}/\text{LUMO}^{\text{d}}$	$E_g^{\text{EC}}$
	(nm)	(nm)	(nm)	(eV)	(V)/(eV)	(V)/(eV)	(eV)
Y1	738	802	905	1.44	1.05 /-5.45	-0.45/-3.95	1.50
Y2	758	827	925	1.40	1.03/-5.43	-0.36/-4.04	1.39

a. Measured in chloroform solution.    b. Cast from chloroform solution.