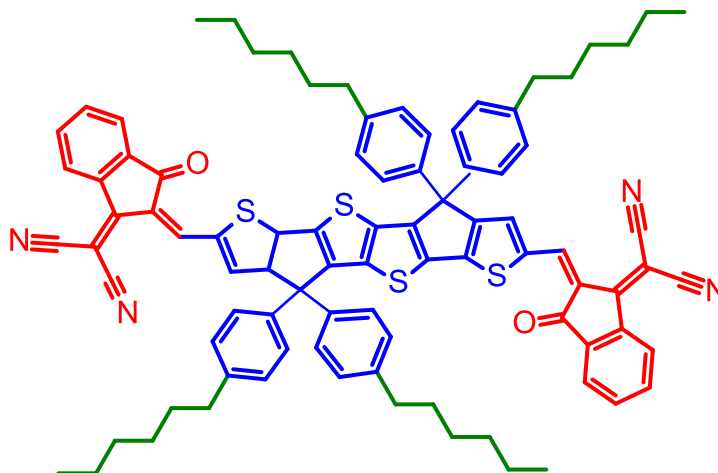


Organic Nano Electronic (ONE=I) Materials for those who understand quality

CERTIFICATE OF ANALYSIS

Material: IHIC/4TIC/NFA156
CAS# 2127354-15-6
Formula: $C_{90}H_{80}N_4O_4S_4$ (Mw = 1377.88)
Chemical Name: 2,2'-[[[4,4,9,9-tetrakis(4-hexylphenyl)-4,9-dihydrothieno[3',2':4,5]cyclopenta[1,2-*b*]thieno[2'',3'':3',4']cyclopenta[1',2':4,5]thieno[2,3-*d*]thiophene-2,7-diyl]bis[methylidyne(3-oxo-1*H*-indene-2,1(3*H*)-diylidene)]]bis-propanedinitrile



Lot: DW3145P
Appearance: Shine bluish brown-purple solid
NMR: Confirmed
Assay: 99+%
Solubility: soluble in $CHCl_3$, CB, ODCB and other selected solvents
Support Info: see below

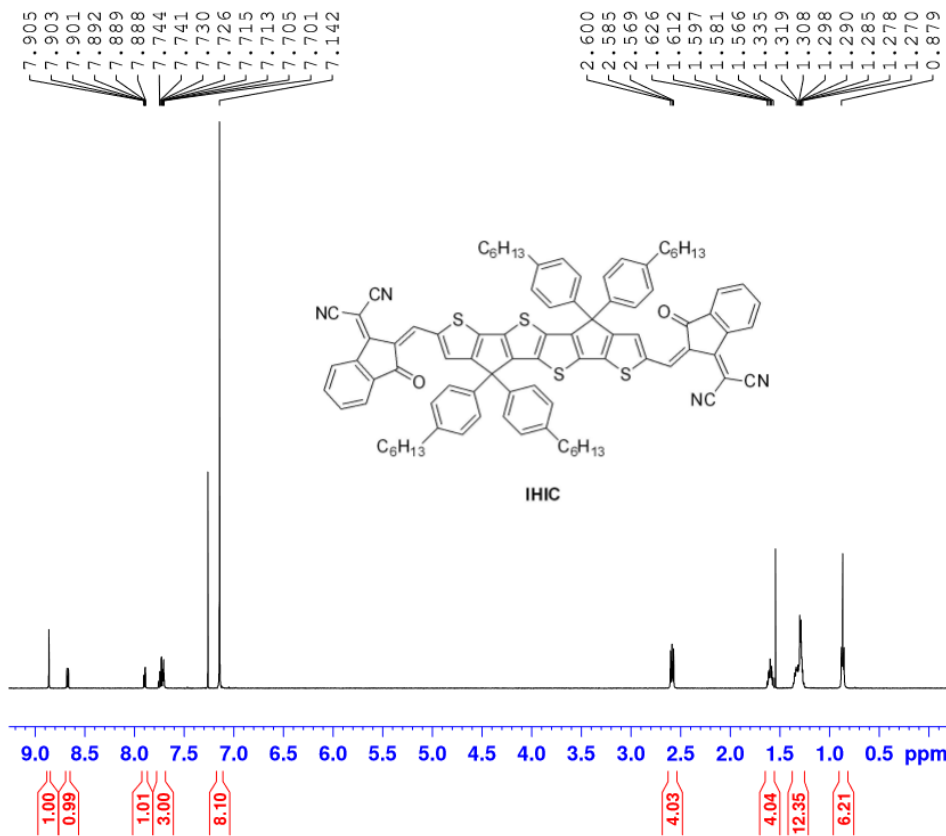
IHIC/4TIC

Typical physical appearance of IHIC/4TIC (Lot# DW3145P)



Typical NMR Spectrum of IHIC/4TIC (Lot#3145P)

Company 1_Material
1d_proton_16scans CDC13 {D:\1Material} 1Mat_P 10



```

NAME      DW3145P-Jul20-2018
EXPNO     10
PROCNO    1
Date_     20180720
Time      14.36
INSTRUM   spect
PROBHD    5 mm PABBI 1H/
PULPROG   zg30
TD         65536
SOLVENT   CDC13
NS         16
DS         2
SWH        10330.578 Hz
FIDRES     0.157632 Hz
AQ         3.1719923 sec
RG         1290
DW         48.400 usec
DE         13.61 usec
TE         298.2 K
D1         1.0000000 sec
TD0        1
    
```

```

===== CHANNEL f1 =====
NUC1      1H
P1         7.10 usec
PL1        -0.80 dB
PL1W      24.64280701 W
SFO1      500.3330897 MHz
SI         131072
SF         500.3300123 MHz
WDW        EM
SSB         0
LB         0.10 Hz
GB         0
PC         1.00
    
```

Fused Hexacyclic Nonfullerene Acceptor with Strong Near-Infrared Absorption for Semitransparent Organic Solar Cells with 9.77% Efficiency

Wei Wang, Cenqi Yan, Tsz-Ki Lau, Jiayu Wang, Kuan Liu, Yan Fan, Xinhui Lu, and Xiaowei Zhan*

High-Efficiency Nonfullerene Organic Solar Cells with a Parallel Tandem Configuration

Lijian Zuo, Jiangsheng Yu, Xueliang Shi, Francis Lin, Weihua Tang,* and Alex K.-Y. Jen*

