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thermo scientific

Chemicals

Organic Photovoltaics and Ancillary Products

Complete portfolio for optimal results

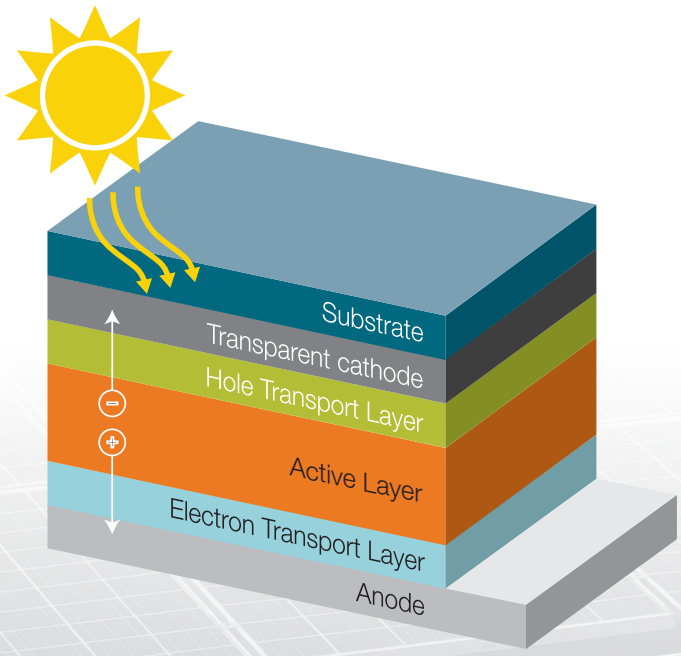
Organic Photovoltaics
Innovation and high performance

Introduction

Organic photovoltaics (OPV) are solar cells based on organic semiconductors, which are thin, light, flexible and mechanically resistant. OPV research has progressed rapidly during the last decade, their performances rapidly closing the gap with conventional silicon technologies.

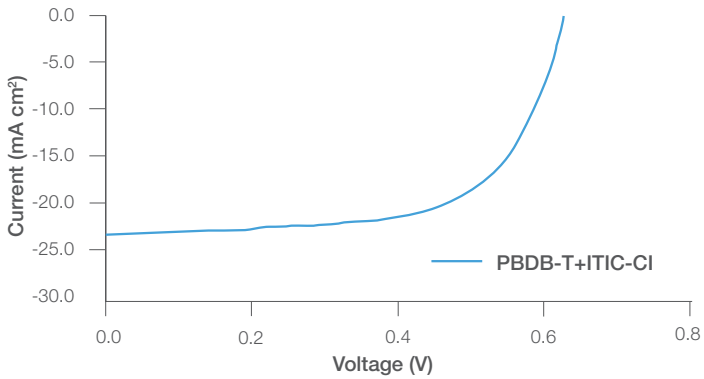
OPV's show potential as an affordable energy technology, that moreover are light, can have tandem structures, and can be fabricated on plastic substrates, with potential applications in consumer electronics.

In OPV architecture the active layer is a blend of two organic semi-conductors known as the donor (p-type material) and the acceptor (n-type material). Their properties can be fine-tuned for specific needs and many high-performance materials are now available.



Conventional OPV architecture

To achieve high-performance devices, the n-type and the p-type materials must have compatible optical and electronic properties. Semiconductors with complementary absorptions will help to convert more photons and energy and maximize the current produced. Fine-tuning the energy levels can increase the device voltage.



N-Type materials

Fullerene derivatives have traditionally performed very well as n-type materials. However, novel conjugated molecules have recently gained traction due to increased performances and stability. N-type polymers are also on the rise as an alternative. (Product shot from slide)

P-Type materials

Conjugated polymers are the most common materials in OPV. They are the source of many of the desirable properties of OPV devices:

- **Mechanically robust**
- **Chemical stability**
- **Printability**
- **High photon absorption**

We offer a range of both n- and p-type products
which are always extensively purified to deliver optimal results every time.

N-Type materials

VWR Cat. No.	Description	CAS#	Sizes
AAH66574-MC	ITIC	1664293-06-4	100 mg, 250 mg, 500 mg
AAH66664-MC	ITIC-F	2097998-59-7	100 mg, 250 mg, 500 mg
AAH66521-MC	ITIC-Cl	2253663-81-7	100 mg, 250 mg, 500 mg
AAH66830-MC	IDT-2BR	2042521-91-3	100 mg, 250 mg, 500 mg
AAH66666-MC	o-IDTBr	2077945-91-4	100 mg, 250 mg, 500 mg
AAH66142-MC	EH-IDTBr	2055812-53-6	100 mg, 250 mg, 500 mg
AAH66656-MC	IEICO	2055812-53-6	100 mg, 250 mg, 500 mg
AAH66546-MC	IEICO-4F	2089044-02-8	100 mg, 250 mg, 500 mg
AAH66752-MC	IEICO-4Cl	2240998-88-1	100 mg, 250 mg, 500 mg
AAH66460-MC	Y5	2304444-48-0	100 mg, 250 mg, 500 mg
AAH66585-MC	Y6	2304444-49-1	100 mg, 250 mg, 500 mg
AAH66035-MC	ITIC-M	2047352-80-5	100 mg, 250 mg, 500 mg
AAH66315-MC	BTP-4Cl		100 mg, 250 mg, 500 mg

P-Type materials

VWR Cat. No.	Description	CAS#	Sizes
AAH66399-MC	PPDT2FBT (PCE9.3)	1620673-07-5	100 mg, 250 mg, 500 mg
AAH66975-MC	PTB7-Th (PCE10)	1469791-66-9	100 mg, 250 mg, 500 mg
AAH66014-MC	PffBT4T-2DT	1430201-60-7	100 mg, 250 mg, 500 mg
AAH66126-MC	PffBT4T-2OD (PCE11)	1644164-62-4	100 mg, 250 mg, 500 mg
AAH66526-MC	PBDB-T (PCE12)	1415929-80-4	100 mg, 250 mg, 500 mg
AAH66713-MC	PDCBT	1609536-17-5	100 mg, 250 mg, 500 mg
AAH66867-MC	PBDB-T-2Cl	2239295-71-5	100 mg, 250 mg, 500 mg
AAH66179-MC	PBDB-T-2F (PCE14)	1802013-83-7	100 mg, 250 mg, 500 mg
AAH66106-MC	PTQ10	2270233-86-6	100 mg, 250 mg, 500 mg
AAH66319-MC	PDPPTT	1260685-66-2	100 mg, 250 mg, 500 mg
AAH66726-ME	P3HT (OPV grade - 91-94% RR)	1609536-17-5	500 mg, 1 g

Ancillary products

Within our extremely broad catalog portfolio we offer many additional ancillary products that can be either used to accompany these products or for the synthesis of additional analogues to meet your research requirements.

These include interlayer, donor, electrode and substrate materials as well as the solvents and additives for processing. Also included is a wide range of heterocyclic building blocks such as numerous thiophene compounds and much more.

These products are available in a variety of pack sizes and grades to meet your research requirements. Larger quantities are available on request.

Interlayers

VWR Cat. No.	Description	CAS#	Sizes
AA36260-AP	Ethanolamine, ACS, 99+%	141-43-5	500 mL, 4 × 500 mL
AAAA17459-AP	2-Methoxyethanol, 99%	109-86-4	500 mL, 2500 mL, 10000 mL
AA11837-22	Molybdenum(VI) oxide, 99.95% (metals basis)	1313-27-5	100 g, 500 g, 2 kg
AA77124-09	Titanium(IV) n-butoxide, 99+%	5593-70-4	10 g, 100 g, 500 g
AAAA12909-22	Zinc acetate dihydrate, 97+%	5970-45-6	100 g, 500 g, 2.5 kg

Electrode and substrate materials for OPV

VWR Cat. No.	Description	CAS#	Sizes
AA40417-09	Aluminum slug, 1.98mm (0.078in) dia × 8.0 mm (0.315in) length, 99.99% (metals basis)	7429-90-5	10 g, 50 g, 250 g
AA40317-03	Gold shot, semi-spherical, 6.35mm (0.25in) & down, Premion®, 99.999% (metals basis)	7440-57-5	1 g, 5 g
AA36348-06	Indium tin oxide, 99.99% (metals basis)	50926-11-9	5 g, 25 g, 100 g
AA41264-KS	Silver sputtering target, 50.8mm (2.0in) dia × 3.18mm (0.125in) thick, 99.99% (metals basis)	7440-22-4	1 each
AA44958-06	Silver Conductive Ink	7440-22-4	5 g, 25 g
AA45661-06	Silver Conductive Ink	7440-22-4	5 g, 25 g, 100 g, 1 kg

Donor materials for the active layer

VWR Cat. No.	Description	CAS#	Sizes
AA44745-77	Poly(3-hexylthiophene-2,5-diyl), regioregular, low metals	104934-50-1	0.1 g, 0.5 g

Solvent/additive for processing

VWR Cat. No.	Description	CAS#	Sizes
AAA11824-22	4-Bromoanisole, 99%	104-92-7	100 g, 500 g, 2500 g
AA32614-K2	Chloroform, ACS, 99.8+%	67-66-3	1, 4, 4 × 4 L
AAA13881-36	1,2-Dichlorobenzene, 99%	95-50-1	500 g, 2500 g, 10000 g
AAA10867-14	1,8-Diiodooctane, 97+%, stab. with copper	24772-63-2	25 g, 50 g
AAA12260-36	1-Methyl-2-pyrrolidinone, 99+%	872-50-4	500 g, 2500 g, 10000 g
AAA15364-18	4-Methoxybenzaldehyde, 98%	123-11-5	50 g, 250 g, 1000 g
AAA13897-18	2-Methylanisole, 99%	578-58-5	50 g, 250 g, 1000 g
AAA15327-22	1-Methylnaphthalene, 96%	90-12-0	100 g, 54-00 g
AAA11358-AE	o-Xylene, 99%	95-47-6	100 mL, 500 mL, 2500 mL

Building Blocks

Bithiophene derivatives

VWR Cat. No.	Description	CAS#	Sizes
AAA12335-03	2,2'-Bithiophene	492-97-7	1 g, 5 g, 25 g
AAH56337-06	5,5'-Dibromo-2,2'-bithiophene	4805-22-5	5 g, 25 g

Fluorene derivatives

VWR Cat. No.	Description	CAS#	Sizes
AAH56320-14	9,9-Di-n-dodecyl-2,7-dibromofluorene	286438-45-7	25 g, 100 g
AAH51955-03	9,9-Di-n-octylfluorene-2,7-diboronic acid bis(pinacol) ester	196207-58-6	1 g, 5 g

Thiophene derivatives

VWR Cat. No.	Description	CAS#	Sizes
AAH56243-06	2-Bromo-3-hexylthiophene	69249-61-2	1 g, 5 g, 25 g
AAA14022-09	3-bromothiophene	872-31-1	10 g, 50 g, 250 g
AAA13406-14	2,5-dibromothiophene	3141-27-3	25 g, 50 g, 250 g
AAA10512-06	3,4-dibromothiophene	3141-26-2	1 g, 5 g, 25 g
AAH55891-03	3-hexylthiophene	1693-86-3	1 g, 5 g, 25 g
AAH55466-03	3-octylthiophene	65016-62-8	1 g, 5 g, 25 g
AAA11930-14	Thiophene-2-carbonitrile	1003-31-2	25 g, 100 g, 500 g

Thienothiophene derivatives

VWR Cat. No.	Description	CAS#	Sizes
AAH30637-03	Thienothiophene	251-41-2	1 g, 5 g

Other building blocks & monomers

VWR Cat. No.	Description	CAS#	Sizes
AAH56306-03	4,7-dibromo-benzo-[2,1,3]-thiadiazole	15155-41-6	1 g, 5 g, 25 g
AAA17104-AP	2-ethyl-1-hexanol	104-76-7	500 mL, 2500 mL
AAB23532-14	2-ethylhexyl bromide	18908-66-2	25 g, 100 g, 500 g

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