

Applications

Electronic and Optoelectronic Materials

Aldrich offers a variety of materials for use in electronic and optoelectronic applications, a few of which are described below. We are committed to providing high quality products to meet your research needs. We also welcome new product suggestions. If you have product ideas for electronic or optoelectronic materials, please fax your suggestions with structures and/or CAS registry numbers; **(800)-962-9591** or contact us via email: aldrich@sial.com.

Luminescent, Photorefractive, and Conducting Materials

Aluminum quinolate (Alq_3), a much studied luminescent material,¹⁻³ was recently used in the fabrication of a white LED.⁴ PPV, another well-known light-emitter,^{5,6} can be readily synthesized from the sulfonium salt precursor (Cat. No. [37,708-2](#)).⁷ The conductivity of FeCl_3 -doped PPV was recently examined.⁸ PVK has been used in blue-emitting LEDs⁹ and photorefractive gratings for holographic storage.¹⁰ The surface modification of PTFE films with the emeraldine base of polyaniline (Cat. No. [47,670-6](#)), readily prepared from the emeraldine salt (ES - Cat. No. [42,832-9](#)), resulted in a semi-conductive PTFE surface.¹¹ Emeraldine base has also been employed in the fabrication of doped polyaniline fibers.^{12,13}

Charge Transporters

PBD, an electron transporter, was recently used in the fabrication of CdSe quantum dots, allowing size-tunable emission of light.¹⁴ TPD, a hole transporter, has been utilized in a multilayer, white-light EL device⁴ and in a voltage-tunable-color, organic LED.¹⁵ Tri-*p*-tolylamine, another hole transporter, has recently been employed in a bilayer photoreceptor¹⁶ and in photorefractive composite materials for wide-band operation.¹⁷

Synthetic Precursors

The recent, elegant work of Buchwald and Hartwig has facilitated the synthesis of arylamines.^{18,19} Di-*p*-tolylamine and 3-methyldiphenylamine are just two of the arylamine building blocks available from Aldrich for the synthesis of triarylamines. Optimized conditions for the synthesis of PPV from the *p*-xylylenebis(tetrahydrothiophenium chloride) precursor (Cat. No. [37,708-2](#)) via thermal elimination have been reported.⁷

Products

44,456-1	8-Hydroxyquinoline, aluminum salt, 99.995% (Alq_3)	1 g ; 5g
41,628-2	8-Hydroxyquinoline, aluminum salt, 98% (Alq_3)	1 g ; 5g
37,708-2	<i>p</i>-Xylylenebis(tetrahydrothiophenium chloride), tech., 90% (PPV precursor)	5g ; 25g
18,260-5	Poly(9-vinylcarbazole) (PVK), $M_w = 1,100,000$	10g ; 25g
47,670-6	Polyaniline (emeraldine base) (EB)	10g ; 50g
42,832-9	Polyaniline (emeraldine salt) (ES)	5g ; 25g
22,400-6	2-(4-Biphenyl)-5-(4-<i>tert</i>-butylphenyl)-1,3,4-oxadiazole, 99+% (PBD) .	5g
44,326-3	<i>N,N'</i>-Bis(3-methylphenyl)-<i>N,N'</i>-diphenylbenzidine, 99% (TPD)	1g ; 5g
45,976-3	Tri-<i>p</i>-tolylamine, 97%	1g ; 5g
46,108-3	Di-<i>p</i>-tolylamine, 98%	5g ; 25g
18,351-2	3-Methyldiphenylamine, 98%	10g ; 50g

References: (1) Garbuzov, D.Z. et al. *Polym. Mater. Sci. Eng.* **1996**, 75, 134. (2) Matsumura, M. et al. *Jpn. J. Appl. Phys., Part 1* **1996**, 35, 3468. (3) Hopkins, T.A. et al. *Chem. Mater.* **1996**, 8, 344. (4) Strukelj, M. et al. *J. Am. Chem. Soc.* **1996**, 118, 1213. (5) Faraggi, E.Z. et al. *Adv. Mater. (Weinheim, Ger.)* **1996**, 8, 234. (6) Mauch, R.H. *Appl. Surf. Sci.* **1996**, 92, 589. (7) Zhang, X.B. et al. *Macromolecules* **1996**, 29, 1554. (8) Nagels, P. et al. *Hopping Relat. Phenom. 5, Proc. Int. Conf., 5th* **1993** (Publ. **1994**), 156. (9) Peng, J. et al. *Jpn. J. Appl. Phys., Part 1* **1996**, 35, 4379. (10) Meerholz, K. et al. *J. Inf. Rec.* **1996**, 22, 475. (11) Kang, E.T. et al. *Macromolecules* **1996**, 29, 6872. (12) Hardaker, S.S. et al. *Annu. Tech. Conf. - Soc. Plast. Eng.* **1996**, 54th (Vol. 2), 1358. (13) Hsu, C.H.; Epstein, A.J. *ibid.* **1996**, 54th (Vol.2), 1353. (14) Dabbousi, B.O. et al. *Appl. Phys. Lett.* **1995**, 66, 1316. (15) Kalinoswki, J. et al. *ibid.* **1996**, 68, 2317. (16) Zhang, X. et al. *Chem. Mater.* **1996**, 8, 1571. (17) Burzynski, R. et al. *Polym. Mater. Sci. Eng.* **1995**, 72, 292. (18) Guram, A.S. et al. *Angew. Chem., Int. Ed. Engl.* **1995**, 34, 1348. (19) Louie, J.; Hartwig, J.F. *Tetrahedron Lett.* **1995**, 36, 3609.

