



US006177182B1

(12) **United States Patent**  
**Nguyen**

(10) **Patent No.:** **US 6,177,182 B1**  
(45) **Date of Patent:** **Jan. 23, 2001**

(54) **THERMALLY REACTIVE NEAR INFRARED ABSORPTION POLYMER COATINGS, METHOD OF PREPARING AND METHODS OF USE**

(75) Inventor: **My T. Nguyen, Kirkland (CA)**

(73) Assignee: **American Dye Source, Inc., Mount Royal (CA)**

(\* ) Notice: Under 35 U.S.C. 154(b), the term of this patent shall be extended for 0 days.

(21) Appl. No.: **09/561,817**

(22) Filed: **May 1, 2000**

**Related U.S. Application Data**

(62) Division of application No. 09/275,032, filed on Mar. 18, 1999, now Pat. No. 6,124,425.

(51) **Int. Cl.**<sup>7</sup> ..... **B32B 27/00; C08G 73/00**

(52) **U.S. Cl.** ..... **428/319.3; 428/424.2; 428/491; 428/511; 428/913; 427/407.1; 427/408; 427/411; 427/316; 427/318; 101/453; 101/463.1; 101/470; 528/422; 528/206; 528/208; 528/210; 528/212; 528/216; 528/218; 528/219; 430/118; 430/126; 430/127**

(58) **Field of Search** ..... **428/319.3, 424.2, 428/491, 511, 913; 427/407.1, 408, 411, 316, 318; 101/453, 463.1, 470; 528/422, 206, 208, 210, 212, 216, 218, 219; 430/118, 126, 127**

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

- 3,962,513 6/1976 Eames .
- 3,964,389 6/1976 Peterson .
- 4,046,946 9/1977 Shaw .
- 4,054,094 10/1977 Caddell et al. .
- 4,081,572 3/1978 Pacansky .
- 4,245,003 1/1981 Oransky et al. .
- 4,477,635 10/1984 Mitra .
- 4,501,876 2/1985 Zahr .
- 4,508,811 4/1985 Gravestijn et al. .
- 4,555,475 11/1985 Gamson et al. .
- 4,666,819 5/1987 Elmasry .
- 4,680,375 7/1987 Elmasry .

- 5,085,972 2/1992 Vogel .
- 5,262,275 11/1993 Fan .
- 5,292,556 3/1994 Ma et al. .
- 5,360,899 11/1994 Nussstein et al. .
- 5,362,812 11/1994 Holmes et al. .
- 5,569,573 10/1996 Takahashi et al. .
- 5,595,854 1/1997 Leenders et al. .
- 5,665,524 9/1997 Kashio et al. .
- 5,741,620 4/1998 Holmes et al. .
- 5,824,768 10/1998 Burns et al. .

**FOREIGN PATENT DOCUMENTS**

- 0 514 145 A1 11/1992 (EP) .
- 0 615 162 A2 9/1994 (EP) .
- 0 770 497 A1 2/1997 (EP) .
- 0 770 494 A1 5/1997 (EP) .
- 0 770 495 A1 5/1997 (EP) .
- 0 770 496 A1 5/1997 (EP) .
- 0 773 112 A1 5/1997 (EP) .
- 0 773 113 A1 5/1997 (EP) .
- 0 774 364 A1 5/1997 (EP) .
- 0 800 928 A1 10/1997 (EP) .
- 0 867 278 A1 9/1998 (EP) .
- 1 489 308 10/1977 (GB) .
- 2 273 366 6/1994 (GB) .
- 0 652 483 A1 5/1995 (GB) .
- WO 96/20429 7/1996 (WO) .
- WO 97/39894 10/1997 (WO) .

**OTHER PUBLICATIONS**

U.S. application No. 08/922,714, Persley, filed Sep. 2, 1997.

*Primary Examiner*—Duc Truong

(74) *Attorney, Agent, or Firm*—Goudreau Gage Dubuc

(57) **ABSTRACT**

Provided herein are novel polymeric coating materials for direct digital imaging by laser. More specifically the novel coating materials are thermally reactive near infrared absorption polymers designed for use with near infrared laser imaging devices. This invention further extends to the preparation and methods of use of the novel materials. The invention is particularly useful in the preparation of lithographic printing plates for computer-to-plate and digital-offset-press technologies. The invention extends to photoresist applications, to rapid prototyping of printed circuit boards and to chemical sensor development.

**12 Claims, No Drawings**