



US008338826B2

(12) **United States Patent**
Huang et al.

(10) **Patent No.:** **US 8,338,826 B2**
(45) **Date of Patent:** **Dec. 25, 2012**

(54) **SUSPENSION OR SOLUTION FOR MAKING ORGANIC OPTOELECTRONIC DEVICE, MAKING METHOD THEREOF, AND APPLICATIONS**

(58) **Field of Classification Search** 257/40-43; 438/22, 29, 46, 85, 99; 136/625, 252; 252/518.1, 252/519.3, 20.4, 521.2, 519.51
See application file for complete search history.

(75) Inventors: **Jing-Shun Huang**, Taipei (TW);
Ching-Fuh Lin, Taipei (TW)

(56) **References Cited**

(73) Assignee: **National Taiwan University**, Taipei (TW)

U.S. PATENT DOCUMENTS

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 594 days.

5,371,056	A *	12/1994	Leyrer et al.	502/66
7,211,463	B2	5/2007	Hu et al.	
2008/0075857	A1	3/2008	Chen et al.	
2008/0247929	A1*	10/2008	Augustine et al.	423/239.1
2009/0045738	A1	2/2009	Tsutsui et al.	
2009/0291845	A1*	11/2009	Neto et al.	502/184

* cited by examiner

(21) Appl. No.: **12/574,697**

Primary Examiner — Dung A. Le

(22) Filed: **Oct. 6, 2009**

(74) *Attorney, Agent, or Firm* — Stout, Uxa, Buyan & Mullins, LLP

(65) **Prior Publication Data**

US 2011/0048538 A1 Mar. 3, 2011

(30) **Foreign Application Priority Data**

Aug. 26, 2009 (TW) 98128628 A

(51) **Int. Cl.**
H01L 29/12 (2006.01)

(57) **ABSTRACT**

A suspension or solution for an organic optoelectronic device is disclosed. The composition of the suspension or solution includes at least one kind of micro/nano transition metal oxide and a solvent. The composition of the suspension or solution can selectively include at least one kind of transition metal oxide ions or a precursor of transition metal oxide. Moreover, the method of making and applications of the suspension or solution are also disclosed.

(52) **U.S. Cl.** 257/43; 257/E33.013; 257/E29.068

16 Claims, 7 Drawing Sheets

