



US009663628B2

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

(10) **Patent No.:** **US 9,663,628 B2**

(45) **Date of Patent:** **May 30, 2017**

(54) **STABILIZED MONOMER DISPERSION CONTAINING INORGANIC OXIDE NANOPARTICLES WITH HIGH REFRACTIVE INDEX AND ITS PREPARATION**

(51) **Int. Cl.**  
*B01J 31/00* (2006.01)  
*C08K 3/22* (2006.01)  
(Continued)

(71) Applicant: **National Taiwan University, Taipei (TW)**

(52) **U.S. Cl.**  
CPC ..... *C08K 3/22* (2013.01); *B82Y 30/00* (2013.01); *C07C 15/02* (2013.01); *C07C 31/202* (2013.01);  
(Continued)

(72) Inventors: **Wen-Yen Chiu, Taipei (TW); I-Ann Lei, Taichung (TW); Dai-Fu Lai, New Taipei (TW); Wen-Chang Chen, Taipei (TW); Yang-Yen Yu, Taipei (TW); Guey-Sheng Liou, Taipei (TW); Trong-Ming Don, Taipei (TW)**

(58) **Field of Classification Search**  
CPC ..... *C08F 2/44; B82Y 20/00*  
(Continued)

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

(56) **References Cited**

U.S. PATENT DOCUMENTS

2005/0168799 A1 8/2005 Whitesides et al.  
2007/0062445 A1 3/2007 Kodou et al.  
(Continued)

(\* ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 201 days.

FOREIGN PATENT DOCUMENTS

JP 2009-024068 \* 2/2009 ..... C08F 2/44  
*Primary Examiner* — Khanh Tuan Nguyen  
(74) *Attorney, Agent, or Firm* — Muncy, Geissler, Olds & Lowe, P.C.

(21) Appl. No.: **14/735,491**

(22) Filed: **Jun. 10, 2015**

(65) **Prior Publication Data**

US 2015/0284529 A1 Oct. 8, 2015

**Related U.S. Application Data**

(62) Division of application No. 13/358,027, filed on Jan. 25, 2012, now abandoned.

(30) **Foreign Application Priority Data**

Apr. 18, 2011 (TW) ..... 100113347 A  
Dec. 9, 2011 (TW) ..... 100145476 A

(57) **ABSTRACT**

The present invention relates to a stabilized monomer dispersion containing inorganic oxide nanoparticles with high refractive index in which the refractive index of the inorganic oxide nanoparticles is greater than 1.65 and the average particle size of the high refractive inorganic oxide nanoparticles ranges from 1 to 100 nm and its content is in a range of from 1.0% by weight to 10.0% by weight based on the total weight of the monomer dispersion. The present invention also relates to a process for preparing the stabilized monomer dispersion containing high refractive inorganic oxide nanoparticles.

**7 Claims, 6 Drawing Sheets**

