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(54) **NANOMETAL-POLYMER COMPOSITE CONDUCTIVE FILM AND METHOD FOR PREPARING THE SAME**

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257/753; 427/58; 427/126.3; 428/221
(58) **Field of Classification Search**
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See application file for complete search history

(75) Inventors: **Jiang-Jen Lin, Taipei (TW); Ying-Nan Chau, Taipei (TW); Wei-Li Lin, Taipei (TW)**

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

(56) **References Cited**

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 233 days.

U.S. PATENT DOCUMENTS

2004/0253427 A1 * 12/2004 Yokogawa et al. 428/212
* cited by examiner

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Primary Examiner — Khanh Tuan Nguyen

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(74) *Attorney, Agent, or Firm* — Schmeiser, Olsen & Watts, LLP

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(57) **ABSTRACT**

A method for preparing a nanometal-polymer composite conductive film includes the steps of (1) mixing a metal oxide with a polymer solution; (2) coating a substrate with a solution resulting from step (1), followed by drying the resultant solution to form a film; (3) performing thermal treatment on the film formed in step (2); and (4) sintering the film thermally treated in step (3). The method dispenses with any reducing agent or dispersing agent but allows nanometallic particles to be formed in situ and thereby reduces surface resistance of the polymer film efficiently.

(51) **Int. Cl.**

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H01B 1/22 (2006.01)

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8 Claims, 4 Drawing Sheets

(52) **U.S. Cl.**

CPC ... *B05D 5/12* (2013.01); *H01B 1/22* (2013.01)

