



US009353284B2

(12) **United States Patent**
Moussa

(10) **Patent No.:** **US 9,353,284 B2**
(45) **Date of Patent:** **May 31, 2016**

(54) **THREE DIMENSIONAL PRINTING MATERIAL SYSTEM AND METHOD**

(71) Applicant: **3D Systems, Inc.**, Rock Hill, SC (US)

(72) Inventor: **Khalil Moussa**, Chapel Hill, NC (US)

(73) Assignee: **3D Systems, Inc.**, Rock Hill, SC (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 145 days.

(21) Appl. No.: **14/211,807**

(22) Filed: **Mar. 14, 2014**

(65) **Prior Publication Data**

US 2014/0275317 A1 Sep. 18, 2014

Related U.S. Application Data

(60) Provisional application No. 61/787,591, filed on Mar. 15, 2013.

(51) **Int. Cl.**

B29C 67/00 (2006.01)
C09D 11/10 (2014.01)
C08J 3/28 (2006.01)
C08F 2/50 (2006.01)
C09D 133/08 (2006.01)
C09D 11/101 (2014.01)
C09D 11/107 (2014.01)
C09D 11/322 (2014.01)

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

CPC **C09D 133/08** (2013.01); **B29C 67/0081** (2013.01); **C09D 11/101** (2013.01); **C09D 11/107** (2013.01); **C09D 11/322** (2013.01)

(58) **Field of Classification Search**

CPC B29C 67/0081; C09D 11/101; C09D 11/107; C09D 11/322; C09D 133/08
See application file for complete search history.

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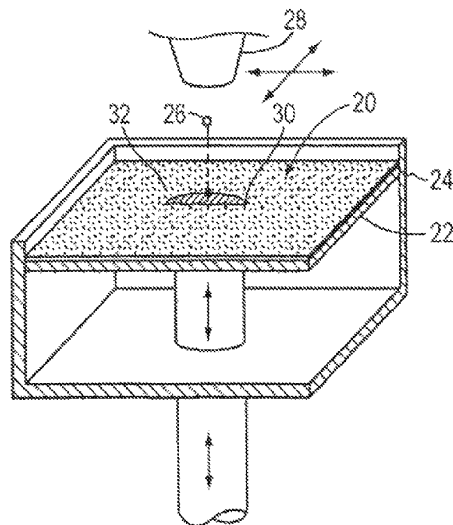
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Primary Examiner — Sanza McClendon

(57) **ABSTRACT**

A materials system and methods are provided to enable the formation of articles by 3D printing. In some embodiments, a materials system includes a substantially dry particulate material that includes an insoluble filler, a soluble filler, and a transition metal catalyst. The materials system further comprises a fluid binder including a (meth)acrylate monomer, an allyl ether functional monomer and/or oligomer, and a free-radical photoinitiator.

22 Claims, 22 Drawing Sheets



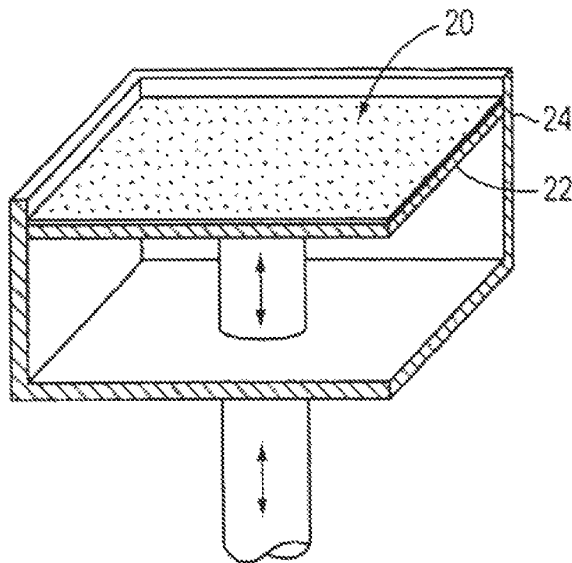


FIG. 1

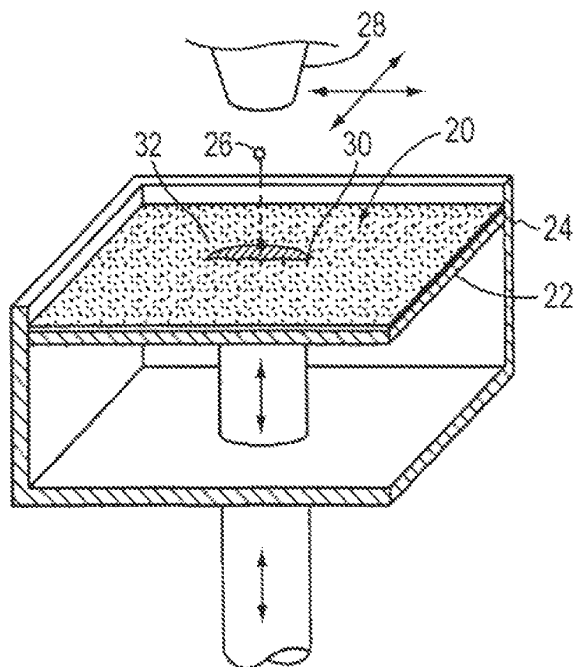


FIG. 2

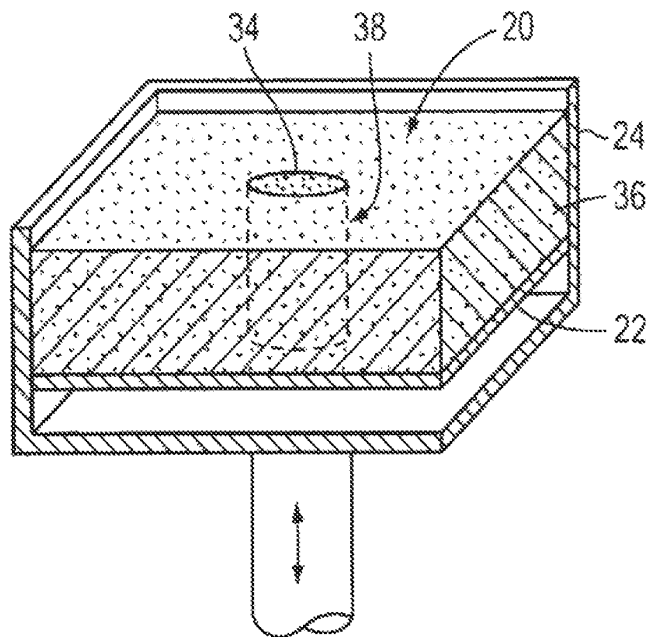


FIG. 3

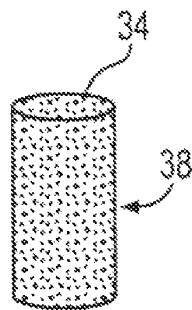


FIG. 4

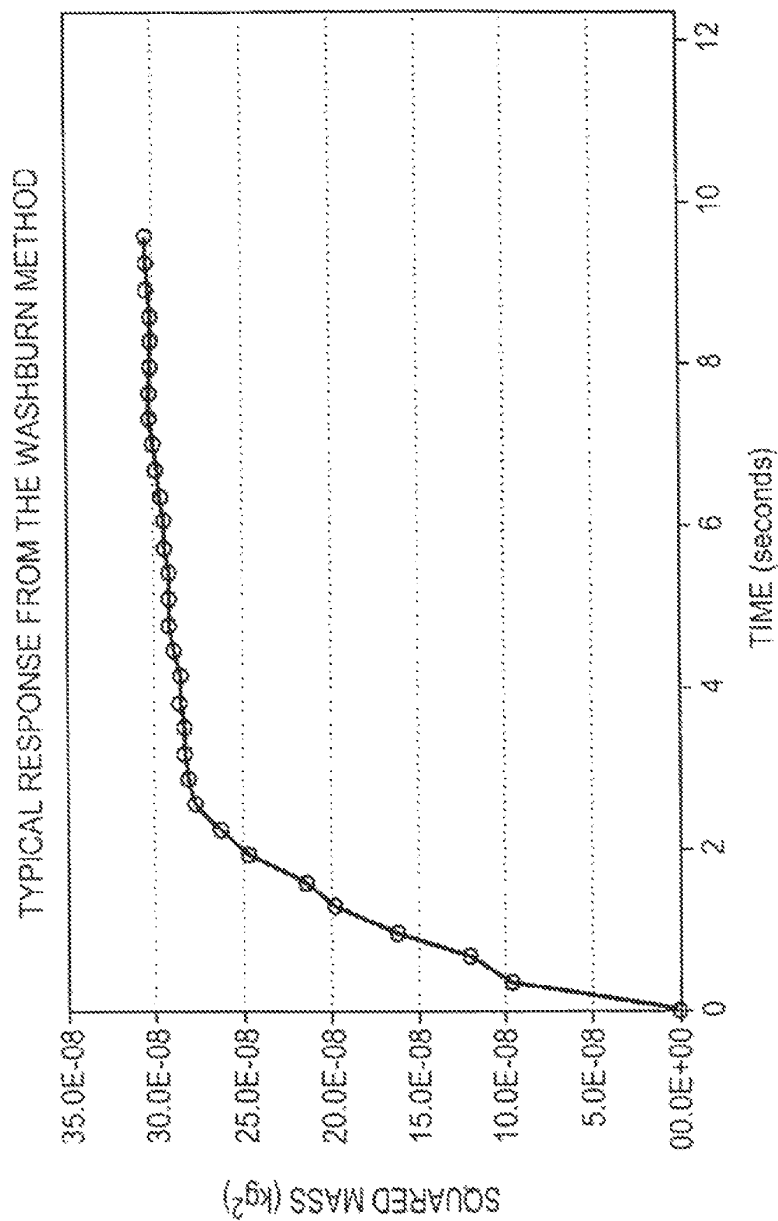


FIG. 5

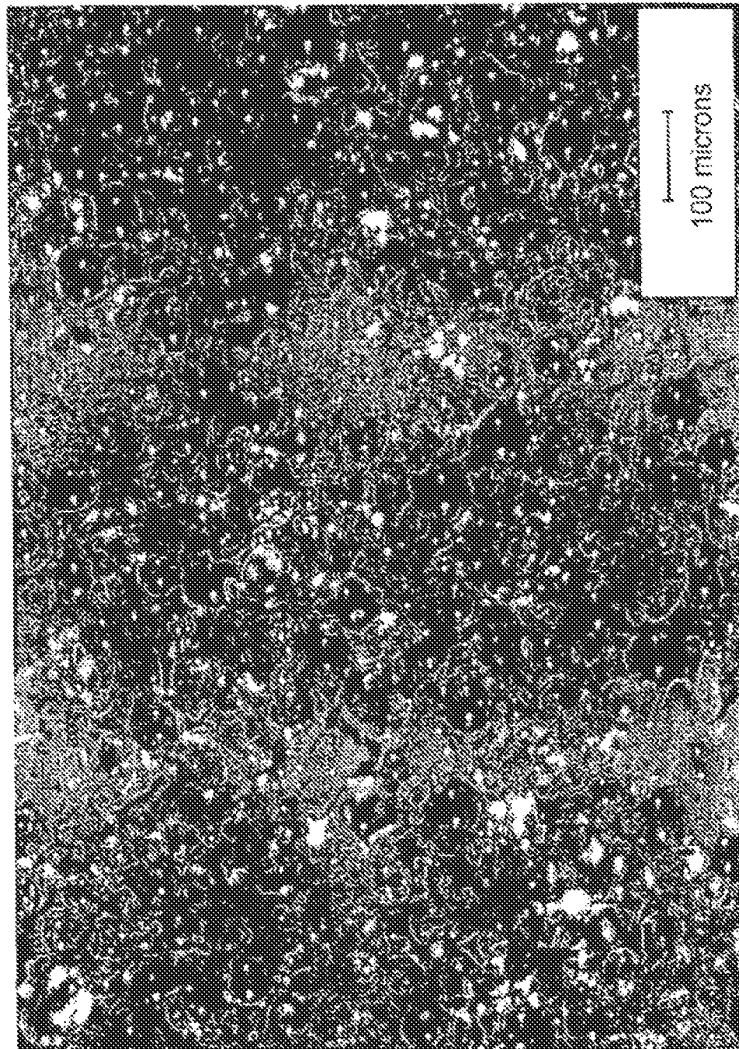


FIG. 6A

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