US009408916B2

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

(10) **Patent No.: US 9,408,916 B2**
(45) **Date of Patent: Aug. 9, 2016**

(54) **POLYMER FILMS**

(71) Applicant: **MicroVention, Inc.**, Tustin, CA (US)

(72) Inventors: **Gregory M. Cruise**, Rancho Santa Margaria, CA (US); **Gloria Hincapie**, Tustin, CA (US); **Clayton Harris**, Tustin, CA (US); **Yue Wu**, Tustin, CA (US)

(73) Assignee: **MicroVention, Inc.**, Tustin, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 32 days.

(21) Appl. No.: **14/491,813**

(22) Filed: **Sep. 19, 2014**

(65) **Prior Publication Data**

US 2015/0079328 A1 Mar. 19, 2015

Related U.S. Application Data

(60) Provisional application No. 61/880,029, filed on Sep. 19, 2013.

(51) **Int. Cl.**

C08F 120/56	(2006.01)
A61K 47/32	(2006.01)
A61L 31/14	(2006.01)
A61L 31/16	(2006.01)
A61K 9/00	(2006.01)
C08F 220/56	(2006.01)
C08F 222/10	(2006.01)
C08F 222/38	(2006.01)

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

CPC ***A61K 47/32*** (2013.01); ***A61K 9/0024*** (2013.01); ***A61L 31/148*** (2013.01); ***A61L 31/16*** (2013.01); ***C08F 120/56*** (2013.01); *C08F 220/56* (2013.01); *C08F 222/1006* (2013.01); *C08F 222/385* (2013.01); *Y10T 428/21* (2015.01)

(58) **Field of Classification Search**

CPC C08F 120/56

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,070,348	A	1/1978	Kraemer et al.
4,157,323	A	6/1979	Yen et al.
4,925,677	A	5/1990	Feijen
5,417,982	A	5/1995	Modi
5,545,423	A	8/1996	Soon-Shiong et al.
5,635,215	A	6/1997	Boschetti et al.
5,648,100	A	7/1997	Boschetti et al.
5,662,935	A	9/1997	Motta

(Continued)

FOREIGN PATENT DOCUMENTS

CN	103709323	A	4/2014
EP	0240424	B1	5/1991

(Continued)

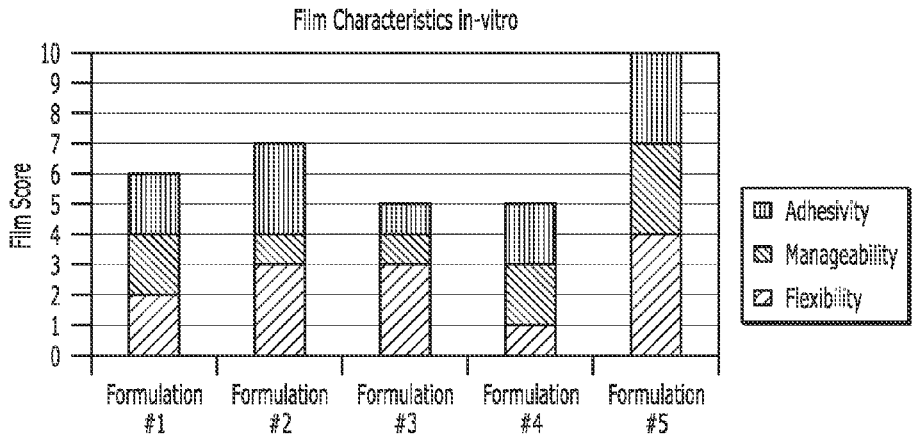
OTHER PUBLICATIONS

STN search Feb. 2, 2016.*

(Continued)

Primary Examiner — David Sample
Assistant Examiner — Christopher Polley
(74) *Attorney, Agent, or Firm* — K&L Gates LLP; Louis C. Cullman; Brian J. Novak

(57) **ABSTRACT**

Biodegradable, cross-linked polymer films and methods of making the same are described. The polymer films can be used for preventing adhesions following surgery and/or delivering therapeutic agents.

23 Claims, 2 Drawing Sheets