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(54) **POLYMER, PREPARATION METHOD THEREOF, COMPOSITION AND FILM COMPRISING THE SAME**

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(58) **Field of Classification Search**

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See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

6,342,569	B1	1/2002	Manzoni et al.	
7,893,174	B2	2/2011	Matyjaszewski et al.	
2007/0244262	A1 *	10/2007	Zhang	C08F 259/08 525/242
2010/0189946	A1	7/2010	Hochstetter et al.	

FOREIGN PATENT DOCUMENTS

EP	2857425	A1	4/2015
JP	63-072732	A	4/1988
KR	10-0796987	B1	1/2008
KR	2010-0036267	A	4/2010
KR	2010-0072967	A	7/2010

OTHER PUBLICATIONS

International Search Report for PCT/KR2013/004886, dated Sep. 10, 2013.
Supplemental Search Report from European Application No. 13 79 6676, dated Oct. 16, 2015.

* cited by examiner

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(57) **ABSTRACT**

Provided is a polymer, a composition and film comprising the polymer, and a preparation method of the polymer. The polymer includes a compound having a hydrophobic property at its terminal, and thus a film capable of having a hydrophobic surface can be provided at the same time when the film is formed without a separate surface treatment. Further, an effect capable of permanently hydrophobically modifying a film surface is obtained at a low cost and a composition that does not occur a phase separation phenomenon in a polymer solution state is provided. For example, the film is used as a water repellent coating film, an anti-contamination film, or the like.

12 Claims, No Drawings