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(54) **REVERSIBLE HYDROGEL SYSTEMS AND METHODS THEREFOR**

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(57) **ABSTRACT**

The present invention relates to reversible hydrogel systems for medical applications. Particularly, the hydrogel of the present invention is made up of copolymers that can be a hydrogel when in an oxidized state and can be a solution when in a reduced state. A solution of the copolymer can be oxidized to form a hydrogel; and the hydrogel can be reduced to form a solution of the copolymer. The solution can be dehydrated to produce the dry copolymer for storage. Furthermore, the present invention also relates to methods of making and using the reversible hydrogel systems.

15 Claims, 8 Drawing Sheets