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Wallace et al.

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(54) **RAPID-GELLING BIOCOMPATIBLE
POLYMER COMPOSITION AND
ASSOCIATED METHODS OF PREPARATION
AND USE**

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ABSTRACT

A method is provided for the rapid formation of a biocompatible gel, and may be carried out in situ, i.e., at a selected site within a patient's body. The method involves admixing a biocompatible crosslinking component A having m sulfhydryl groups wherein m ≥ 2 and a biocompatible crosslinking component B having n sulfhydryl-reactive groups wherein n ≥ 2 and m+n > 4, wherein the sulfhydryl-reactive groups are capable of covalent reaction with the sulfhydryl groups upon admixture of the components under effective crosslinking conditions to form a gel in less than one minute. Suitable reaction conditions for carrying out the crosslinking reaction will depend on the particular components and the type of reaction involved; that is, the "effective crosslinking conditions" may involve reaction in bulk or in a solvent, addition of a base, and/or irradiation of the admixture in the presence of a free radical initiator. Exemplary uses include tissue augmentation, biologically active agent delivery, bioadhesion, and prevention of adhesions following surgery or injury. Reactive gel-forming compositions and systems are also provided.