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(54) **FUNCTIONALIZED CROSS-LINKED POLYMER NETWORKS, METHODS OF MAKING SAME, AND USES THEREOF**

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(57) **ABSTRACT**

In various examples, a functionalized cross-linked polymer network includes a plurality of cross-linked multifunctional trione triazine groups, a plurality of disulfide groups, a plurality of cross-linked multifunctional ether groups, a plurality of cross-linked multifunctional polyether groups, or a combination thereof, a plurality of crosslinking multifunctional polyether groups, and a plurality of dangling groups, where individual cross-linked multifunctional trione triazine groups and/or cross-linked multifunctional disulfide groups and/or cross-linked multifunctional ether groups and/or cross-linked multifunctional polyether groups and individual crosslinking multifunctional polyether groups are connected by one or more covalent bond(s) and individual dangling groups may be connected to the network by a covalent bond. At least a portion of or all of the dangling groups may be halogenated. A functionalized cross-linked polymer network may be made by polymerization (e.g., Thiol-ene reach on(s)) of one or more functionalized monomer(s) and one or more multifunctional monomer(s).