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(54) **Title:** POLYMER-COATED NANOPARTICLES

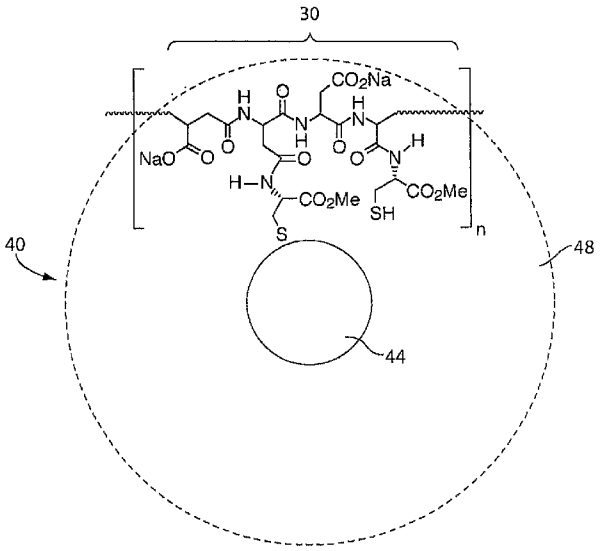

Fig. 2

(57) **Abstract:** Polymers for coating nanoparticles (e.g., colloid nanoparticles and quantum dots) and methods associated therewith are provided. Such polymers may be derived from amino acids comprising suitable functional groups for associating the polymer to the nanoparticle. For example, in some embodiments, the polymer includes a polypeptide backbone (e.g., polyaspartic acid) with amino acid side groups (e.g., cysteine and/or methionine). Such a polymer can enable strong binding of the polymer to the nanoparticle surface via its multiple thiol groups, which can lead to excellent colloidal stability. Moreover, the carboxylic acid and amine functional groups of the polymer can facilitate attachment of binding partners (e.g., antibodies) to the polymer, which can allow the polymer-coated nanoparticle to be used in a variety of applications including protein detection and cell labeling.

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