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Synthesis and characterization of polypeptide-Co3O4 nano-conjugates. BITHI PAUL, MAHMUD REAZ, MD ABDULLAH-AL MAMUN, ADAM WANEKAYA, Missouri State Univ, ROBERT DELONG, Kansan State University, HARIBHUA GHOLAP, KARTIK GHOSH, Missouri State Univ, MISSOURI STATE UNIVERSITY TEAM, KANSAS STATE UNIVERSITY COLLABORATION — Nanoconjugates, composites of inorganic nanomaterials and biomolecules such as DNA, RNA, and proteins, establish sequences of a wide varieties nano-bio boundaries. The formation of these boundaries strongly depends on complex bio physicochemical reactions. Polypeptide nanostructures exhibit a unique type of self-assembled bio-material having many interesting properties and applications. Nanoparticles of Co3O4 exhibit ferromagnetism at room temperature. In this work, we are investigating structural and magnetic properties of polypeptide-Co33O4 nano-conjugates. Polypeptide nanotubes were made using Phenylalanine, diphenyl hexafluoride isopropanol, and deionized water using sol-gel method. The peptide tubes were hybridized with Co3O4 through the reduction of Co ions from CoCl2 aqueous solution and the heat treatment. SEM images show that polypeptide nanotubes are nicely decorated with inorganic nanoparticles. EDX data indicate conjugation between peptide nanotubes and Co3O4. To characterize the metallic oxide phase and the interface more prominently, nano-bio composites were probed using XRD, Raman spectroscopy, and magnetic measurement. This research work is supported by National Cancer Institute (1R15 CA139390-01).

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