

Abstract Submitted
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Study on the Biogenic Organic Metals and Metal Oxide Nanoparticles for Artificial Tissues EUNICE JEONG, Emma Willard School, DOHYUN AHN, JMD Homeschool — Right after biomaterial implantation, plasma proteins interact with the molecules in the material surface and it starts to create a proteinaceous coating. The interactions of the proteins with molecules are determined by various parameters including the physicochemical properties of the biomaterial nanoparticles such as topography and activity of the materials and the properties of the protein. To assess the tissue affinity of the biomaterials, the theoretical structure of feasible biogenic organic metals and metal oxide nanoparticles is studied in this study. The physical and biochemical activity of those molecules is thermodynamically and stereochemically characterized after modeling and optimizing them. The ultimate goal of this study is to check for the materials to achieve better physicochemical stability and affinity with tissues. To determine a molecules thermodynamic stability, molecular editing software for building virtual molecules and calculating optimized geometry using UFF (Universal Force Field), is used to build the molecules.

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