# Design, Modeling and Characterization of Bio-Nanorobotic Systems

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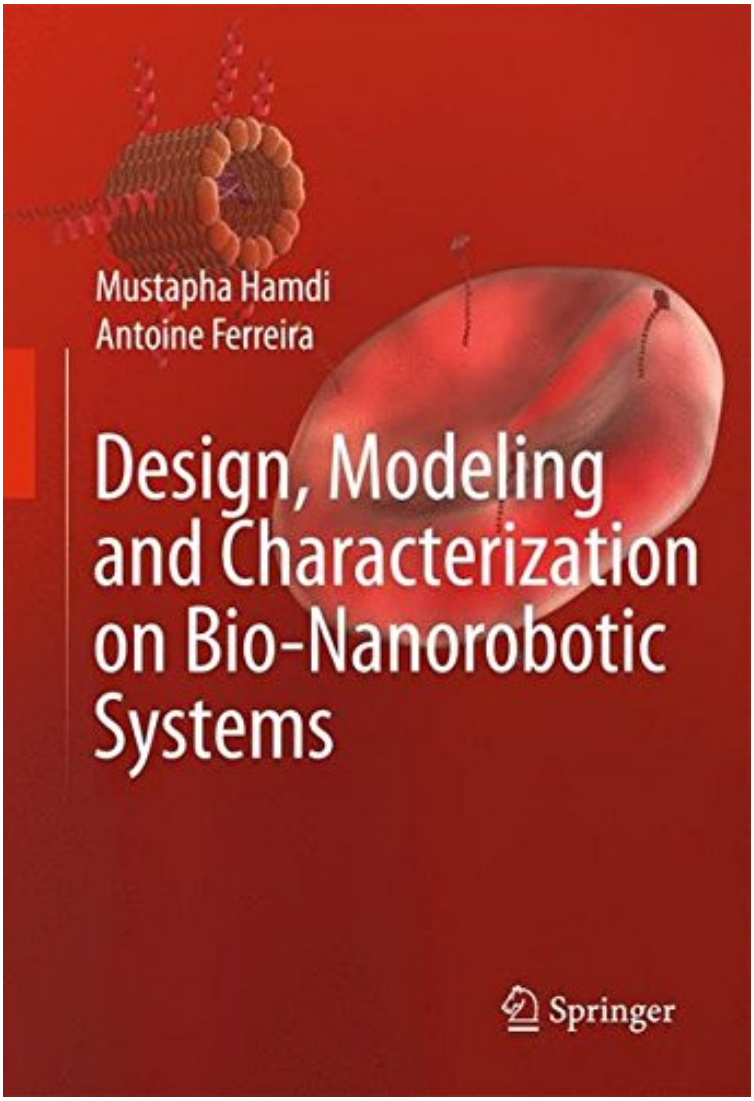




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**Mustapha Hamdi, Antoine Ferreira : Design, Modeling and Characterization of Bio-Nanorobotic Systems** before purchasing it in order to gage whether or not it would be worth my time, and all praised Design, Modeling and Characterization of Bio-Nanorobotic Systems:

Nanorobots represent a nanoscale device where proteins such as DNA, carbon nanotubes could act as motors, mechanical joints, transmission elements, or sensors. When these different components were assembled together they can form nanorobots with multi-degree-of-freedom, able to apply forces and manipulate objects in the nanoscale

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From the Back CoverNanorobots represent a nanoscale device where proteins such as DNA, carbon nanotubes could act as motors, mechanical joints, transmission elements, or sensors. When these different components were assembled together they can form nanorobots with multi-degree-of-freedom, able to apply forces and manipulate objects in the nanoscale world. Design, Modeling and Characterization of Bio-Nanorobotic Systems investigates the design, assembly, simulation, and prototyping of biological and artificial molecular structures with the goal of implementing their internal nanoscale movements within nanorobotic systems in an optimized manner. Design, Modeling and Characterization of Bio-Nanorobotic Systems focuses, mainly on two approaches. The first one involves multiscale modeling tools (quantum mechanics, molecular dynamics, continuum mechanics) coupled to virtual reality advanced techniques. In order to design and evaluate the characteristics of molecular robots, we proposed interactive nanophysics-based simulation which permits manipulation of molecules, proteins and engineered materials in molecular dynamics simulations with real-time force feedback and graphical display. The second approach uses a novel co-prototyping methodology, where the nanorobotics multiscale model is coupled to experimental measurements. Design, Modeling and Characterization of Bio-Nanorobotic Systemspresents a novel concept of nanorobots, bio-nanoactuators based DNA and rotating nanodevices based carbon nanotubes. In addition the presented platform helped to characterize the interaction between novel drug delivery systems and cellular membrane.