

Nanomaterials and Nanotechnology

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Status and modeling of nanomedicine

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Continuing development in the field of nanomedicine—and in particular, nanorobotics—promises new medical solutions through the direct treatment of cells. While much of the work in nanorobotics remains theoretical, the creation of a multifunctional, medicinal nanorobot capable of diagnosing and treating diseases such as cancer appears feasible. Nanorobots are especially exciting because their scale gives them certain advantages not available to larger robots. These advantages have the potential to vastly improve therapies. For example, nanorobots' ability to target and treat a single tissue area or cell could make therapies perform more efficiently and cause fewer side effects. Experimentation is currently being done on organic, inorganic and hybrid nanorobots, with inorganic nanorobots thought to be the most likely to succeed in performing the complex, precise tasks required of medical nanorobots. Biocompatibility is an important requirement for nanorobots and will present challenges for researchers in the coming years. Without the ability to physically produce robots on the nanoscale, researchers can use computer modeling to determine how various components will function once introduced into the body. Our research team at the University of Southern California has developed a system that models nanoscale drug delivery through the bloodstream. As interest in nanomedicine and nanotechnology builds, research institutions around the world are receiving increasing amounts of funding to explore and innovate in these areas.

Biography

Mary Mehrnoosh Eshaghian-Wilner is an interdisciplinary scientist and patent attorney. She is currently a Professor of Engineering Practice at the Electrical Engineering Department of USC. She is best known for her work in the areas of optical computing, heterogeneous computing and nanocomputing. Her current research involves the applications and implications of these and other emerging technologies in medicine and law. He has founded and/or chaired numerous IEEE conferences and organizations and serves on the Editorial Board of several journals. She is the recipient of several prestigious awards and has authored and/or edited hundreds of publications, including three books.

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