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Nanorobotics is a field of science and engineering that involves the design, fabrication, and control of robots or machines at the nanometer scale (1 to 100 nanometers). These machines are so small that they can interact with individual cells, proteins, and molecules, allowing for precise control and manipulation of matter at the molecular level.

The development of nanorobotics has been driven by advances in nanotechnology, materials science, and computer science. Nanorobots can be made from a variety of materials, including metals, polymers, and biological molecules, and can be powered by a range of energy sources, such as light, heat, or magnetic fields.

Nanorobots have a wide range of potential applications in fields such as medicine, electronics, and manufacturing. In medicine, nanorobots could be used for targeted drug delivery, cancer treatment, and minimally invasive surgeries. In electronics, they could be used to manufacture smaller and more efficient devices, such as computer chips and sensors. In manufacturing, they could be used to assemble and manipulate materials at the nanoscale, allowing for the development of new materials with unique properties.

One of the major challenges in the field of nanorobotics is developing methods for controlling and manipulating these tiny machines. Researchers are developing new technologies, such as microelectromechanical systems (MEMS), to create nanorobots that can be remotely controlled and guided through the body or other environments.

Overall, nanorobotics is an exciting and rapidly growing field that has the potential to revolutionize many areas of science and technology. However, significant research and development are still needed to overcome the challenges associated with designing and controlling these tiny machines.



B CHETAN KUMAR  
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