Qeios

Peer Review

Review of: "Nanoreactors are very diverse. Simple or complex, organic and inorganic materials with electrical conductivity,"

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Nanoreactors are very diverse. Simple or complex, organic and inorganic materials with electrical conductivity, volume, and pore structures are used as nanoreactors. Unlike microreactors, the reaction space inside nanoreactors greatly affects the mobility and interactions between molecules inside it. Therefore, a nanoreactor is not just a simple storage container and plays an important role in the electrochemical process. Nanoreactors are relatively new materials, but in nature, various processes have long been using nanoreactors. Carrying out electrochemical reactions in confined spaces with nanometer dimensions and micrometer volumes leads to changes in the kinetics and path of the entire process. Such confined spaces used to carry out specific electrochemical reactions are called nanoreactors . Nanoreactors are very small containers with nanometer dimensions that have great potential for improving electrochemical conversions by protecting catalysts from environmental effects and confining reactants and catalysts in a small space for a long time . In fact, nanoreactors are porous materials with one of their dimensions being on the nanoscale.

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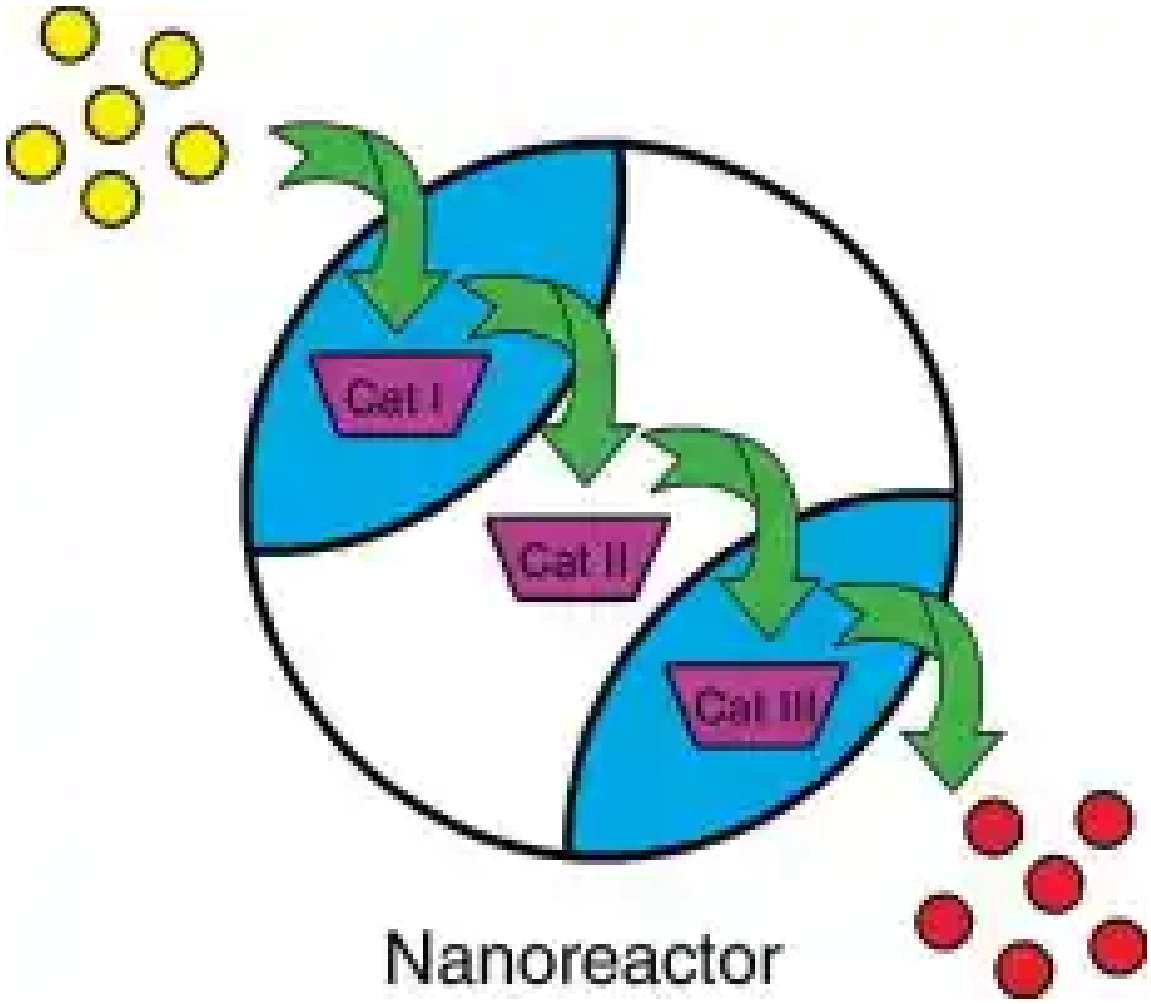

The countless and simultaneous reactions in the cells of living organisms are also based on this principle. Therefore, various biological and chemical structures that have the characteristics of a nanoreactor are used.

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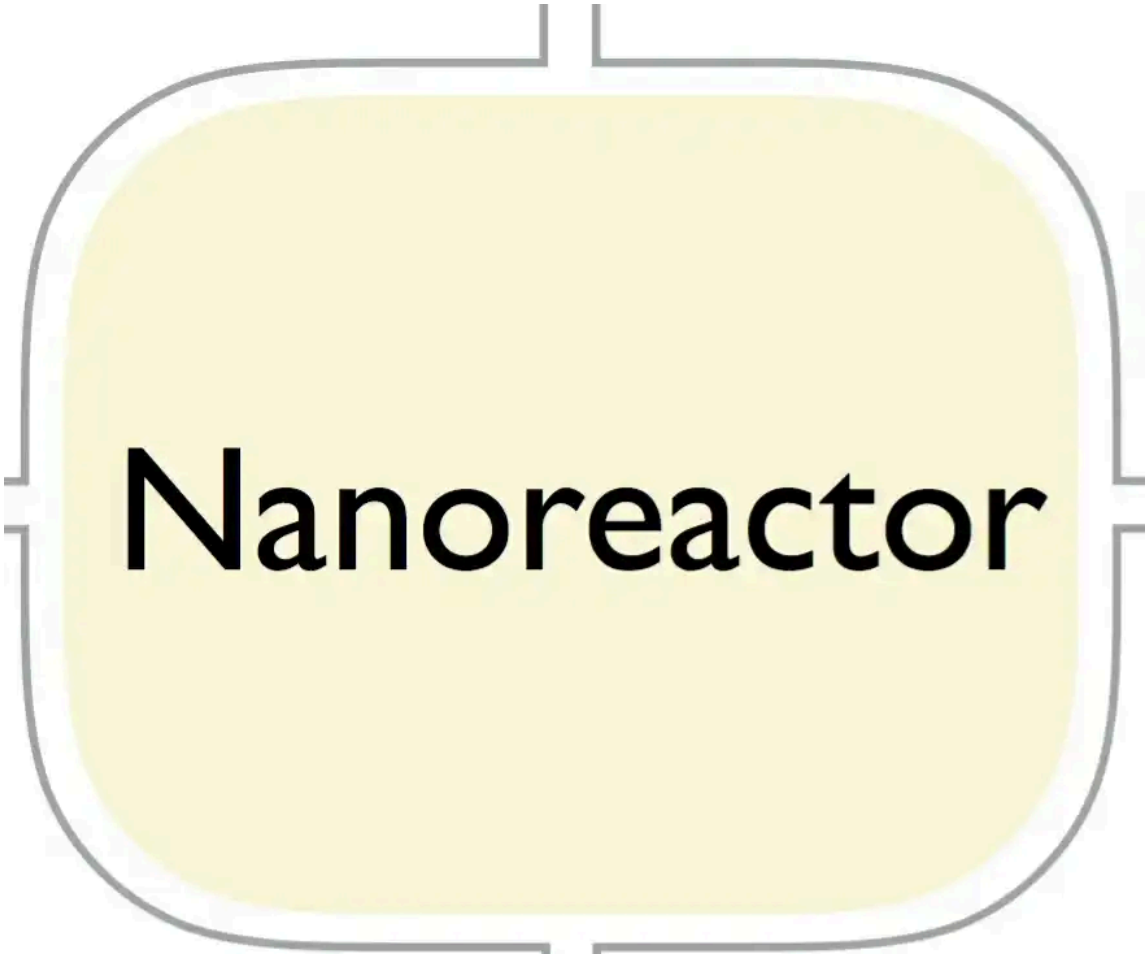

Reasons and advantages of using reactors and nanoreactors On a macroscopic scale, a chemical reactor is a chamber that allows a reaction to take place in a specific volume. One of the advantages of using a reactor is the ability to precisely control reaction conditions such as solvent, temperature, and stirring speed. On a micro and nano scale, chambers can also be created that separate a specific volume of the reaction mixture from the bulk medium . If a chemical reaction is confined within such a chamber, then this chamber is considered a nanoreactor . The advantages of using nanoreactors include greater control over the reaction, selectivity, separation of porous materials, and electronic conductivity of nanomaterials from the bulk medium, followed by reduced toxicity of the system or increased catalyst stability, and ideality in electrochemical processes due to their small size.

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Attachments: available at https://doi.org/10.32388/0WUU1S

Declarations

Potential competing interests: No potential competing interests to declare.