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| Book Name: | [Pharmaceutical Science: New Insights and Developments](https://www.bookpi.org/bookstore/product/pharmaceutical-science-new-insights-and-developments-vol-1/) |
| Manuscript Number: | **Ms\_BPR\_4293** |
| Title of the Manuscript:  | **Nanoparticles: Characteristics, Preparation, Applications, and Challenges in Modern Technologies** |
| Type of the Article | **BOOK CHAPTER** |

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| PART 1: Comments |
|  | Reviewer’s comment | Author’s Feedback *(Please correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)* |
| **Please write a few sentences regarding the importance of this manuscript for the scientific community. A minimum of 3-4 sentences may be required for this part.** | **This manuscript provides a comprehensive overview of nanoparticles, highlighting their unique characteristics and diverse applications in modern technologies. The detailed analysis of different types of nanoparticles, including polymeric, solid lipid, and metallic nanoparticles, enriches the scientific community’s understanding of their potential in fields such as medicine, energy, and consumer goods. By addressing both the advantages and challenges, particularly in terms of toxicity, immunogenicity, and environmental impact, this work contributes valuable insights for developing safer, more efficient nanotechnologies. Furthermore, it emphasizes the importance of characterization techniques, which are crucial for ensuring the quality and performance of nanoparticles in various applications.** |  |
| **Is the title of the article suitable?****(If not please suggest an alternative title)** | **Yes, the title "Nanoparticles: Characteristics, Preparation, Applications, and Challenges in Modern Technologies" is suitable and aligns well with the content** |  |
| Is the abstract of the article comprehensive? Do you suggest the addition (or deletion) of some points in this section? Please write your suggestions here. | * The first sentence could be more concise, particularly regarding the size range and properties. It might be helpful to separate the information on size and properties.
* The term "game-changing technology" is a bit informal for an academic context.
* A few grammatical adjustments are needed for smooth reading, some sentences are a bit lengthy and could be split for clarity.
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| **Is the manuscript scientifically, correct? Please write here.**  | 1. The manuscript mentions that nanoparticles exhibit special physical, chemical, and biological properties due to their size range of 1-100 nm. This is correct, and it might be useful to briefly highlight some of these properties such as high surface-area-to-volume ratio, quantum effects, and the ability to penetrate biological barriers.2. The manuscript mentions several types of nanoparticles, including polymeric, solid lipid, and metallic nanoparticles. These are indeed common types used in a variety of fields, especially in drug delivery and biomedical applications. For completeness, it should be briefly included additional types of nanoparticles like, silica nanoparticles, lipid-based nanoparticles, dendrimers and quantum dots. 3. The mention of various preparation methods (sol-gel, spinning, CVD, pyrolysis, biosynthesis) is scientifically sound, as these techniques are commonly used for nanoparticle synthesis. Consider expanding on the advantages and limitations of each technique.4. The description of techniques like SEM, AFM, and drug entrapment efficiency is scientifically accurate and reflects common methods used to evaluate nanoparticles. To make this more comprehensive, you could add other common characterization methods such as **dynamic light scattering (DLS)** for particle size distribution, or **X-ray diffraction (XRD)** for crystallinity. These techniques are crucial for understanding the physical properties of nanoparticles.5. The explanation of in vitro release studies using a Franz diffusion cell is correct and commonly used to study drug release profiles. You should mention specific factors that can affect drug release, such as **pH**, **ionic strength of the medium**, or **surface modifications** of nanoparticles. 6. The terminology throughout the manuscript is accurate and scientifically appropriate. But in some cases you need clarity, for example, avoid switching between terms like "bioavailability" and "bioaccessibility" unless there's a distinct difference in the context.  |  |
| **Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.****-** | **https://www.mdpi.com/2079-4983/13/4/196** |  |
| Is the language/English quality of the article suitable for scholarly communications? | The language quality of the manuscript is suitable for scholarly communication, but a few minor improvements in sentence structure, clarity, and conciseness could enhance the overall readability. The tone is formal and appropriate for the target audience. By tightening up some of the phrasing and improving the flow of a few sentences, the manuscript would meet the high standards typically expected for scientific publications. |  |
| Optional/General comments | Overall, the manuscript is well-organized and covers important aspects of nanoparticle science. With some refinement in structure, depth, and language, it can become even more impactful. |  |

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| **PART 2:**  |
|  | **Reviewer’s comment** | **Author’s comment** *(if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)* |
| **Are there ethical issues in this manuscript?**  | *(If yes, Kindly please write down the ethical issues here in details)* |  |

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| **Reviewer Details:** |
| Name: | **Aynura Karimova** |
| Department, University & Country | **Baku State University, Azerbaijan** |