Review of: "Investigation of the Dielectric Behaviour of Propylene Glycol (100) Dispersed With Graphene Nano Powder to Determine the Optimal Conditions Using Response Surface Methodology"

MAZIYAR Sabet

Potential competing interests: No potential competing interests to declare.

Contributions of the paper "Open Peer Review on Qeios Investigation of the Dielectric Behaviour of Propylene Glycol (100) Dispersed With Graphene Nano Powder to Determine the Optimal Conditions Using Response Surface Methodology" include:

- Investigating the dielectric behavior of a Propylene Glycol-Graphene Nanopowder nanofluid using response surface methodology (RSM).
- Testing and evaluating two models (linear and 2FI) to determine the best prediction model for the nanofluid's dielectric behavior.
- Finding that the 2FI model accurately depicts nanofluids twice as well as other models, according to statistical analysis.
- Providing model evaluation indicators such as R2, C.V%, and P-value to assess the performance of the models.
- Identifying the desired electrical conductivity of nanofluids at specific distances and the breakdown voltage
- Highlighting the importance of nanoparticle type, concentration, dispersion, and temperature in tailoring the electrical conductivity and dielectric characteristics of nanofluids.
- Emphasizing the potential of propylene glycol-water nanofluids in electronic and electrical systems with further research and understanding.
- Developing empirical models using response surface methodology (RSM) and evaluating their effectiveness in predicting viscosity.
- Selecting the 2FI model as the best model based on its low P-value, indicating high precision and statistical significance.
- Stating the importance of repeatability and accuracy in laboratory measurements and experimentation.

Final Decision: The paper needs the following major amendments prior to publication:

- The study only focuses on the dielectric behavior of a specific nanofluid (Propylene Glycol-Graphene Nanopowder) and does not explore other types of nanofluids or their applications.
- The research does not consider the influence of other factors such as temperature, nanoparticle concentration, and dispersion on the dielectric behavior of the nanofluid.
- The study does not provide a comprehensive analysis of the limitations and potential sources of error in the

experimental setup and measurement techniques used.

- The research does not investigate the long-term stability and reliability of the nanofluid's dielectric behavior, which is important for real-world applications.
- The study does not discuss the potential challenges and limitations in scaling up the production and implementation of the nanofluid in practical systems.
- Further investigation of the dielectric behavior of different types of nanofluids, considering factors such as nanoparticle type, concentration, dispersion, and temperature, to expand the understanding of their electrical conductivity and dielectric characteristics .
- Exploration of the long-term stability and reliability of the nanofluid's dielectric behavior to assess its suitability for real-world applications .
- Conducting experiments to validate the predictive power and accuracy of the 2FI model for other nanofluids and electrical systems .
- Scaling up the production and implementation of the Propylene Glycol-Graphene Nanopowder nanofluid, considering the challenges and limitations that may arise in practical systems .
- Investigating the impact of other factors, such as temperature, nanoparticle concentration, and dispersion, on the viscosity of nanofluids using response surface methodology (RSM) .
- Exploring the potential applications of propylene glycol-water nanofluids in electronic and electrical systems, with a focus on optimizing their dielectric behavior .