# Article information:

Charge generation, charge transport, and residual charge in the electrospinning of polymers: A review of issues and complications: Journal of Applied Physics: Vol 111, No 4
<https://aip.scitation.org/doi/abs/10.1063/1.3682464>

# Article summary:

1. Electrospinning is a popular technique for generating nonwoven mats with submicron fibers.

2. The electrospinning process involves three important domains: creation of charge carriers, charge transport, and residual charge.

3. The physical processes that determine the electrospinning process dynamics are complex and require further research to fully understand and control.

# Article rating:

May be slightly imbalanced: The article presents the information in a generally reliable way, but there are minor points of consideration that could be explored further or claims that are not fully backed by appropriate evidence. Some perspectives may also be omitted, and you are encouraged to use the research topics section to explore the topic further.

# Article analysis:

The article "Charge generation, charge transport, and residual charge in the electrospinning of polymers: A review of issues and complications" provides a comprehensive overview of the physical processes involved in electrospinning. The authors identify three process domains and the physical domain of charge interaction as important in electrospinning: (a) creation of charge carriers, (b) charge transport, (c) residual charge. They summarize the physics of each domain in terms of current understanding and indicate possible sources of ambiguity in the implementation of this technique.

Overall, the article is well-written and informative. It provides a detailed explanation of the electrospinning process and highlights some potential challenges that researchers may encounter when attempting to use this technique. However, there are several areas where the article could be improved.

One potential bias in the article is that it focuses primarily on the technical aspects of electrospinning without discussing its broader applications or implications. While it is true that electrospinning has become a widely implemented technique for generating nonwoven mats for tissue engineering and filter applications, there are many other potential uses for this technology that are not discussed in detail.

Another potential issue with the article is that it does not provide enough evidence to support some of its claims. For example, while it is stated that fibers with submicron diameters can be produced using electrospinning, no data or references are provided to back up this claim. Similarly, while it is suggested that there may be sources of ambiguity in implementing this technique, no specific examples are given.

Additionally, there are some missing points of consideration in the article. For example, while it is noted that charges created in the fluid can remain as residual charges in solidified fibers, there is no discussion about whether these residual charges could have any negative effects on downstream applications or on human health.

Finally, while the article does present both sides equally by discussing both the benefits and challenges associated with electrospinning, it could benefit from more exploration of counterarguments or alternative viewpoints.

In conclusion, "Charge generation, charge transport, and residual charge in the electrospinning of polymers: A review of issues and complications" provides a useful overview of electrospinning but could benefit from more evidence to support its claims and more exploration of alternative viewpoints.

# Topics for further research:

* Applications of electrospinning beyond tissue engineering and filter applications
* Potential negative effects of residual charges in electrospun fibers on downstream applications or human health
* Techniques for measuring the diameter of electrospun fibers
* Alternative methods for generating nonwoven mats for tissue engineering and filter applications
* Comparison of electrospinning to other fiber spinning techniques
* Environmental impact of electrospinning and potential alternatives with lower environmental impact

# Report location:

<https://www.fullpicture.app/item/35b93218796789129b51f1067374a849>