# Article information:

Direct (hetero)arylation polymerization, electrochemical and optical properties of regioregular 3-substituted polythiophenes with alkylsulphanyl and alkylsulfonyl groups - ScienceDirect  
<https://www.sciencedirect.com/science/article/abs/pii/S0014305722000362>

# Article summary:

1. Direct (hetero)arylation polymerization was used to synthesize regioregular polythiophenes with alkylsulphanyl and alkylsulfonyl side chains.

2. The head-to-tail regioregularity of the polymer was determined by 1H NMR method.

3. The HOMO and LUMO energy levels of poly(3-alkylthiophene) were lowered by adjusting the oxidation state of sulfur from sulfanyl to sulfonyl.

# 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 is generally reliable and trustworthy, as it provides a detailed description of the synthesis process, results, and discussion of the electrochemical and optical properties of regioregular 3-substituted polythiophenes with alkylsulphanyl and alkylsulfonyl groups. The authors provide evidence for their claims in the form of UV−vis, fluorescence, and electrochemical measurements, as well as crystallographic analysis of these synthetic polymers. Furthermore, they acknowledge potential limitations in their research such as possible risks that may be associated with the use of these materials.

However, there are some points that could be improved upon in order to make the article more reliable and trustworthy. For example, there is no mention of any potential counterarguments or alternative explanations for their findings which could have been explored further. Additionally, there is no discussion on how this research could be applied in practical applications or what implications it may have for future research in this field. Finally, there is no mention of any ethical considerations related to this research which should have been addressed in order to ensure its reliability and trustworthiness.

# Topics for further research:

* Practical applications of regioregular 3-substituted polythiophenes
* Ethical considerations for synthetic polymer research
* Counterarguments for electrochemical and optical properties of regioregular 3-substituted polythiophenes
* Implications of regioregular 3-substituted polythiophenes for future research
* Risks associated with the use of regioregular 3-substituted polythiophenes
* Crystallographic analysis of regioregular 3-substituted polythiophenes

# Report location:

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