# Article information:

Comparative study on the surface free energy of a solid calculated by different methods - ScienceDirect  
<https://www.sciencedirect.com/science/article/pii/S0142941806001577>

# Article summary:

1. Adhesion is important in various industrial processes and can be improved by modifying the surface layer of polymeric materials.

2. Surface free energy (SFE) and contact angle (CA) measurements are used to characterize and predict adhesive properties of materials.

3. Different methods for calculating SFE, such as the Owens-Wendt, van Oss-Chaudhury-Good, and Neumann methods, have their own mathematical formulae and limitations in terms of measuring liquids and material reactions.

# Article rating:

Appears moderately imbalanced: The article provides some useful information, but is missing several important points or pieces of evidence that would be required to present the discussed topics in a balanced and reliable way. You are encouraged to seek a more balanced perspective on the presented issues by exploring the provided research topics and looking at different information sources.

# Article analysis:

The article titled "Comparative study on the surface free energy of a solid calculated by different methods" provides an overview of various methods used to determine the surface free energy (SFE) of polymeric materials. The author highlights the importance of SFE in predicting adhesive properties and improving wettability, which is crucial for many industrial processes such as gluing, printing, and coating.

The article discusses several methods for determining SFE, including the Young and Laplace equations, Zisman method, Owens-Wendt method, van Oss-Chaudhury-Good method, and Neumann equation. The author provides a detailed analysis of each method's assumptions and limitations. However, the article lacks a critical evaluation of these methods' accuracy and reliability in real-world applications.

One potential bias in the article is its focus on mathematical equations and technical details rather than practical applications. While it is essential to understand the underlying principles behind SFE determination methods, it would be helpful to provide examples of how these methods are used in industry or research.

Another issue with the article is its one-sided reporting on the controversies surrounding some SFE determination methods. For example, while discussing the Neumann equation's controversy regarding the nature of β constant, the author only presents two opposing views without exploring other possible explanations or counterarguments.

The article also lacks evidence to support some claims made by the author. For instance, when discussing differences in SFE values calculated using different methods, the author states that these differences occur objectively regardless of measurement precision or conditions. However, no evidence or data are provided to support this claim.

Furthermore, there is promotional content in favor of certain SFE determination methods such as van Oss-Chaudhury-Good method. The author highlights growing interest in this method among researchers but does not provide a balanced evaluation of its advantages and disadvantages compared to other methods.

Overall, while providing valuable insights into various SFE determination methods, the article lacks critical evaluation and balanced reporting on controversies and limitations. The author could have provided more practical examples and evidence to support their claims and explored counterarguments to provide a more comprehensive analysis.

# Topics for further research:

* Real-world applications of surface free energy determination methods in industry
* Accuracy and reliability of surface free energy determination methods in practical settings
* Criticisms and limitations of the Young and Laplace equations for surface free energy determination
* Comparison of the Owens-Wendt and van Oss-Chaudhury-Good methods for surface free energy determination
* Effect of measurement precision and conditions on surface free energy determination results
* Alternative explanations for the controversy surrounding the Neumann equation's β constant.

# Report location:

<https://www.fullpicture.app/item/141b1818c2ee8ebefd356b867797fe0e>