# Article information:

Definitions for Hydrophilicity, Hydrophobicity, and Superhydrophobicity: Getting the Basics Right | The Journal of Physical Chemistry Letters
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# Article summary:

1. Surface science has become a popular field of research due to the self-cleaning effect displayed by Lotus leaves in nature, and the study of surfaces with special wettability, repellency, and adhesion has been extremely active in recent years.

2. The definitions of hydrophobicity and hydrophilicity are widely accepted in surface science, but there is a need for a better definition that is supported by technical data. A proposed definition based on linear regression analyses suggests that a surface is hydrophilic when the receding contact angle (θR) is < 90° and hydrophobic when θR is > 90°.

3. Other proposed measures of hydrophilicity and hydrophobicity include the free energy of hydration (ΔGsl), which can be used to analyze the properties of different compounds.

# 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:

该文章提供了对表面科学中水亲和性、疏水性和超疏水性的定义，但存在一些问题。

首先，文章没有提供足够的理论支持来解释为什么表面在静态接触角θ从89°到91°时会从亲水变为疏水。这使得读者难以理解这些定义的分界线是如何确定的。

其次，文章只关注了静态接触角θ、前进接触角θA和后退接触角θR之间的关系，并未考虑其他因素对表面特性的影响。例如，表面粗糙度、化学成分等都可能影响表面的亲水性或疏水性。

此外，文章提出了一个新的定义：当θR < 90°时，表面是亲水的；当θR > 90°时，表面是疏水的。然而，该定义并没有得到足够的证据支持，并且忽略了其他因素对表面特性的影响。

最后，文章没有探讨这些特殊涂层可能带来的潜在风险或负面影响。例如，在实际应用中，这些涂层可能会受到环境条件（如温度、湿度）等因素的影响而失去其特殊功能。

总之，尽管该文章提供了一些有用信息来解释表面科学中不同特性之间的关系，但它也存在一些偏见和缺失。需要更多深入探讨和证据支持来完善这些定义，并考虑它们在实际应用中可能带来的风险和限制。

# Topics for further research:

* Theoretical explanation for the transition from hydrophilicity to hydrophobicity
* Other factors affecting surface properties
* Evidence supporting the new definition of hydrophilicity and hydrophobicity
* Potential risks and negative effects of special coatings
* Further exploration and evidence to improve definitions
* Limitations and risks in practical applications

# Report location:

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