# Article information:

Realization of integrative hierarchy by in-situ solidification of ‘semi-cured’ microcilia array in candle flame for robust and flexible superhydrophobicity - ScienceDirect  
<https://www.sciencedirect.com/science/article/pii/S1385894721059702>

# Article summary:

1. A method for producing a flexible superhydrophobic film with mechanical, chemical, and physical robustness has been developed using a template-free approach and in-situ solidification of a microcilia array in a candle flame.

2. The integrative multi-level structures formed through this method exhibit improved bonding strength and withstand external pressure for enhanced robustness.

3. The approach is solvent and fluorine-free, cost-effective, and has potential for real-world applications such as wearable sensors and flexible microfluidics.

# 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 "Realization of integrative hierarchy by in-situ solidification of ‘semi-cured’ microcilia array in candle flame for robust and flexible superhydrophobicity" discusses a new method for creating flexible superhydrophobic surfaces that are mechanically robust, chemically resistant, and maintain their water-repellent properties during deformation. The article highlights the potential applications of such surfaces in various fields, including flexible electronics.

The article provides a detailed description of the method used to create the superhydrophobic surface, which involves generating a micro-cilia array in a template-free manner and then curing it in a candle flame before depositing candle soot nanoparticles onto the surface. The resulting hierarchical structures are said to be more robust than those created using other methods due to the improved bonding strength between the micro/nanostructures.

While the article provides some evidence to support its claims, there are several areas where further research is needed. For example, while the authors claim that their method is environmentally friendly and low-cost, they do not provide any data to support these claims. Additionally, while they state that their approach is solvent and fluorine-free, they do not discuss any potential risks associated with using candle soot nanoparticles or other materials.

Furthermore, while the authors acknowledge that previous methods for creating flexible superhydrophobic surfaces have faced challenges related to mechanical fragility and bonding strength between micro/nanostructures, they do not provide a comprehensive analysis of these issues or explore alternative solutions. Additionally, while they claim that their method is superior to others in terms of mechanical robustness and chemical resistance, they do not provide any direct comparisons with other methods or materials.

Overall, while the article presents an interesting new approach for creating flexible superhydrophobic surfaces with improved mechanical robustness and chemical resistance, further research is needed to fully evaluate its potential benefits and limitations. Additionally, more data is needed to support some of the claims made in the article, and alternative solutions to the challenges faced by previous methods should be explored.

# Topics for further research:

* Environmental impact of candle soot nanoparticles
* Comparison of bonding strength between micro/nanostructures in different methods
* Alternative methods for creating flexible superhydrophobic surfaces
* Long-term durability of superhydrophobic surfaces under different conditions
* Potential risks associated with using fluorine-based materials in superhydrophobic surfaces
* Applications of flexible superhydrophobic surfaces in different industries and fields

# Report location:

<https://www.fullpicture.app/item/97999105dfe3a51b01a30fb5e310cd85>