Ultra-Thin Conductor Based Semi-Transparent Electromagnetic Shielding Material and Structures

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As wireless devices and technology become more ubiquitous to everyday life, so do the electromagnetic signals they transmit. Materials that shield these signals are important for lowering the amount of electromagnetic pollution around us, which can affect both the proper functioning of other electronic devices and human health. However, creating materials that possess a high degree of shielding from electromagnetic interference (EMI) often comes at the expense of other desirable properties, such as conductance or visible light transmission. The fabrication of EMI materials that are flexible and transparent, while retaining superior EMI shielding and conductivity is imperative for advancing upcoming electronic technologies.

## A mass-production compatible method for fabricating a flexible, transparent, conductive electromagnetic shielding material

Current methods for producing high-performance EMI shielding material that is both flexible and transparent require complex fabrication techniques, making them incompatible with mass production and more costly. In this invention, a flexible material that can shield up to 50 dB of electromagnetic radiation and transmits 96.5% of visible light is fabricated with a roll-to-roll system. Additionally, the material is shown to retain its shielding capabilities when mechanically deformed and performs over a broad range of bandwidths. This technology outlines a mass-production compatible method for fabrication of an EMI material that has properties ideal for incorporation into emerging electronic devices.

## Applications

* Transparent EMI shielding
* Flexible displays

## Advantages

* Roll-to-roll fabrication
* Flexible and transparent

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