Highly tunable hybrid organic-inorganic materials for electronic devices

Technology #cu12234

Owing both to the increased dependence on technology and the evolving miniaturization of electronic devices, developing low-cost, tunable electronic components continues to draw considerable interest. Many popular electronic devices such as computers and cellular phones rely on semiconductors, typically made of inorganic silicon, which can require multiple and costly steps to produce. Organic molecules, on the other hand, are inexpensive to make, but often lack the desired materials properties possessed by inorganic elements like silicon. This technology combines both the tunability of organic molecules and the desired electronic properties of inorganic elements into a solution processable organic-inorganic hybrid material, leading to a low-cost, highly tunable material ideal for semiconductor electronics.

Combing the low-cost of organic materials with the electronic properties of inorganic compounds provides comparable performance to silicon at a fraction of the production costs

This technology is a solution processable organic-inorganic hybrid material for flexible electronics. Solution processing is very low cost due to its minimal number of process steps and low temperature, while also providing a high degree of reliability and homogeneity. Because of the decreased reaction temperature and fewer number of processing stages, hybrid material synthesis via solution is far cheaper than purely inorganic material processing. The materials are synthesized using precise conditions and reactants; therefore, interchangeable constituents can be utilized for highly tunable product material characteristics. With these benefits, a host of electronic applications can be envisioned, making this hybrid organic-inorganic material well suited for developing low-cost, versatile semiconductor electronics.

Lead Inventor:

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Applications:

- Semiconductors
- Electronic displays
- Piezoelectrics
- Photovoltaics
• Magnetic devices

**Advantages:**

• Low cost, solution-phase processing
• Flexible
• Highly tunable

**Patent Information:**

Patent Pending ([WO/2013/148211](http://wo2013148211))

Tech Ventures Reference: IR CU12234

**Related Publications:**


**Inventors**

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