

# SibFU scientists together with their colleagues from Mahatma Gandhi University (India) developed a nanocomposite material that is better at shielding electromagnetic noise than metal

A Russian-Indian team of scientists has developed a nanocomposite material effective at shielding electromagnetic noise. Nanoparticles-based composites blend using multiwalled carbon nanotubes as conducting filler is two times more effective than conventional metal-based shielding materials. TASS: Science & Space portal reported on the development.

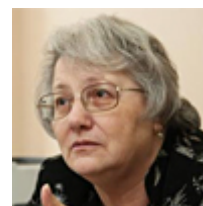


*"Shielding effectiveness of the material is sufficient for industrial use which requires 20dB, and ours is significantly higher, going up to 40dB. Our development is a composite based on polytrimethyleneterephthalate and multiwalled carbon nanotubes nanocomposites and it has high conductive properties. The material is designated for shielding elements under conditions of electromagnetic radiation primarily in the range of ultra-high frequencies",*

SibFU Professor **Sabu Thomas**, head of research, explained.

Nowadays, not only the gadgets, but electricity transmission lines, the subway, neon signs and even automobile engines are all sources of electromagnetic radiation. Protection against noise generated from fields of interference sources overlapping is important not just for satellite systems and telephony, but also for the Internet of Things. The more devices, the more intensive the electromagnetic noise is.

*"Metal remains the most common material that shields devices from electromagnetic interference. Low strength-to-weight ratio and susceptibility to corrosion are among its disadvantages. It creates a demand for new materials that would have properties required for shields protecting electronics from electromagnetic intervention. Shielding is especially important for X (8.2-12 GHz) and Ku (12-18 GHz) bands that have minimal reflection losses and high electromagnetic absorption ability"* Head of Basic Department of Biotechnology **Tatiana Volova**, who is also a Head of Laboratory of new materials biotechnology, explained.



Materials science is developing rapidly now due to the evolution of nanotechnologies. Conductive polymers, metal nanoconductors (nanorods and nanowires), carbon nanotubes, 2D-crystals (graphene and transition metal dichalcogenides) are granting the opportunities for transition to new electronic components.

*"Many promising areas in materials science, nanotechnologies, nanoelectronics, applied chemistry and biotechnologies are now linked to carbon frameworks – fullerenes and nanotubes etc. With this in mind, we find our experience of cooperation between materials science researchers from India and SibFU remarkable and successful. SibFU is currently working on a functional biodegradable biopolymers of wide application scope megagrant headed by the leading scientist Professor Sabu Thomas"* **Volova** summed up.

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