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## Novel polyvinyl alcohol/silver hybrid nanocomposites for high performance electromagnetic wave shielding effectiveness

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### Abstract

A novel conducting polyvinyl alcohol (PVA) reinforced silver (Ag) nanoparticles were successfully synthesized for electromagnetic wave shielding at microwave frequency. The microstructures of the nanocomposites were examined by means of X-ray diffraction, field-emission scanning electron microscope and transmission scanning microscopy. Mechanical and electrical properties of PVA/Ag nanocomposite were investigated in detail. With the inclusion of 10 wt% Ag nanoparticles to PVA matrix, an electromagnetic interference shielding effectiveness of magnitude in the range of 51 dB in the microwave frequency was obtained. The prepared new nanocomposites can be used in the microwave devices and also for biomedical applications with low cost.

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