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Flexible and Transparent Piezoelectric Loudspeakers Based on Vertically Aligned PZT and Graphene Nanoplatelets

Flexible, transparent, and cost-effective loudspeakers combine PZT and graphene nanoplatelets in a polymer matrix for integration into automotive, aerospace, military, and display applications.

Researchers at Purdue University have developed new flexible and transparent loudspeakers by combining vertically aligned lead zirconate titanate (PZT) and graphene nanoplatelets in a polymer matrix. Current technologies utilize magnets and cone-shaped diaphragms to project sound, which is often expensive and unreliable. The method created by Purdue researchers includes a simple, lightweight, and cost-effective assembly. In testing, the new loudspeaker has improved sound frequency up to 2000 Hz, sound pressure level up to 80 dB, and light transmission up to 2200 nm. The loudspeaker system can be easily integrated into automotive, aeronautic, military/defense, television, e-reading applications and as sensors for measuring vibrations.

Advantages:

-Sound quality

-Light-weight

Potential Application:

-Automotive

-Aerospace

-Military/Defense

-E-reading

-Television

TRL: 6

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Category

Materials Science & Nanotechnology/Nanomaterials & Nanostructures

Materials Science & Nanotechnology/Advanced Functional Materials

Automotive & Mobility Tech/Mobility AI & Embedded Intelligence Systems

Authors

Mukerrem Cakmak

Rahim Rahimi

Armen Yildirim

Further information

Dipak Narula

dnarula@prf.org

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