NCITEC Project Information

Principal Investigators:

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Title:

Harvesting Vibrational Energy Due to Intermodal Transport Systems Via Nano Coated Piezo Electric Devices

Abstract:

The nation has a great opportunity to tap into an existing source of energy being lost to the environment in the form of vibrations. These vibrations result from intermodal transport systems such as passenger cars and freight trucks moving on streets and highways, trains moving on railway tracks, and planes moving on airport runways. Recovering energy from these lost vibrations will have considerable economic impact when used for street and highway lighting in high traffic areas for safety concerns. This process will be environmentally sustainable because of the continued traffic vibrations.

The objectives of this project is to enhance the ability of traditional PZT piezo electric materials to generate power by using special coatings made of nano particle mixtures and to demonstrate that the enhanced system can be utilized to power intermodal transport safety lighting systems from roadway vibrations.

The broader impacts of the proposed research include reducing the load demand on the existing power grid. Other benefits of this system could involve enhancing traffic weigh-in-motion sensing, and monitoring of pavement conditions of roads and structural response of bridges for timely maintenance. Additionally, the harnessed energy source can be used to power other roadside monitoring sensors such as real time traffic video surveillance systems.

Start Date:

July 1, 2013

End Date:

June 30, 2015

Subject Categories (select at least one and at most five categories): Energy, Materials, Research

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