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Researchers generate electricity from lysozymes

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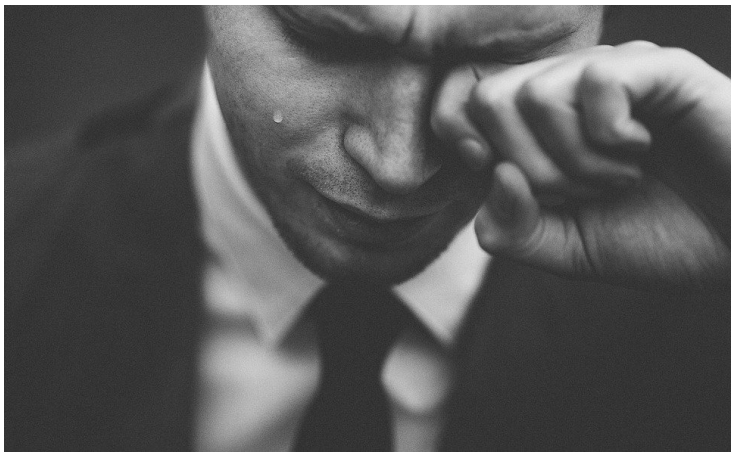

In a finding that could lead to a non-toxic way to power biomedical devices, scientists have discovered a way to produce electricity from tears, reports Daily Post. The researchers observed that crystals of lysozyme, which is a model protein that is abundant in tears as well as in the egg whites of birds, saliva and the milk of mammals, can generate electricity when pressed.

The discovery, detailed in the journal Applied Physics Letters, may have wide reaching applications and could lead to further research in the area of energy harvesting and flexible electronics for biomedical devices.

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The ability to generate electricity by applying pressure — known as direct piezoelectricity — is a property of materials such as quartz that can convert mechanical energy into electrical energy and vice versa.

Bone, tendon and wood are long known to possess piezoelectricity, the researchers said.

“The extent of the piezoelectricity in lysozyme crystals is of the same order of magnitude found in quartz. However, because it is a biological material, it is non-toxic so could have many innovative applications such as electro active, anti-microbial coatings for medical implants,” said lead author Aimee Stapleton, a postgraduate student at the Bernal Institute, University of Limerick (UL) in Ireland. Being naturally biocompatible and piezoelectric, lysozyme may present an alternative to conventional piezoelectric energy harvesters, many of which contain toxic elements such as lead, the researchers noted.