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Suppression of Turbulence using Electrified Granular Material JANSEN KEITH L. DOMOGUEN, JOEL TIU MAQUILING, Geophysics Res. Group, Dept. of Physics, Sch. of Sci. and Eng. Ateneo de Manila University — This research explores an understanding of the transition mechanism between laminar and turbulent regimes of fluid flow using a novel approach of coupling fluid flow with electric phenomena. This was done by electrifying granular material inside a simple capacitor-like electrification chamber using a DC power source. The granular material used was sawdust. The fluid introduced was plume from from burned mosquito coil and burned incense stick. The suppression of turbulence is quantified through a measurement of the extension of the maximum laminar flow length (L_{max}) . Videos of the plume behavior were taken using a Sony Cybershot-WGC camera while image analysis of the plume behavior was done using ImageJ image analysis software. Results reveal significant increase in L_{max} for the plumes exposed to electrified sawdust. Plots of L_{max} -versus-applied voltage and L_{max} -versus-massof-sawdust reveal nonlinear increasing trends. Coupling constants κ and ς were theoretically derived to explain the coupled states between the fluid flow and the electrified sawdust.

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