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**High Gradient AC Dielectrophoretic Filtration** BORIS KHUSID, YUEYANG SHEN, New Jersey Institute of Technology — Dielectrophoresis is the motion of an object under forces resulting from electric field gradients. Unlike a mechanical filter, particles flowing through a dielectrophoretic filter are attracted towards the electrodes and captured in the filter by the dielectrophoretic force, even though their average size can be substantially smaller than the filter pore size. We report a new, economic, easily scaled up method for the fabrication of dielectrophoretic filters. The concept utilizes winding of metal and plastic meshes. In this design, two metal meshes serving as energized and grounded electrodes are mechanically and electrically separated with a plastic mesh. The proposed technology d allows for a reduction in the applied AC voltage and electric power by employing fine mesh materials. The particle captivity of an AC dielectrophoretic filter is governed by the mesh size, the particle size and polarizability, the flow rate, the field frequency, and the peak-to-peak voltage.

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