

Abstract Submitted
for the DFD13 Meeting of
The American Physical Society

Deterministic separation of particles by electrophoresis: e-DLD
SRINIVAS HANASOGE, RAGHAVENDRA DEVENDRA, FRANCISCO J. DIEZ,
GERMAN DRAZER, Department of Mechanical and Aerospace Engineering, Rutgers,
The State University of New Jersey, Piscataway NJ 08854 — A suspension of
particles of different size driven through an array of posts, by either gravity or flow,
results into streams of particles moving in different directions, which can be used for
the continuous separation of different species. In this work, we explore a spatially
uniform electric field as a driving force. Specifically, we apply an electric field to a
quiescent aqueous suspension (constant pH) of spherical particles of different size,
across an isotropic two dimensional array of cylindrical posts at different angles with
respect to the principal directions of the array and track the motion of particles as
they move through the array. In general, the results are in agreement with the
existence of deterministic lateral displacement and directional locking, as with the
other driving fields. We discuss characterization and separation experiments as well
as the advantages of using electric field to separate particles.

Srinivas Kumar Gowranga Hanasoge
Rutgers, The State University of New Jersey

Date submitted: 05 Aug 2013

Electronic form version 1.4