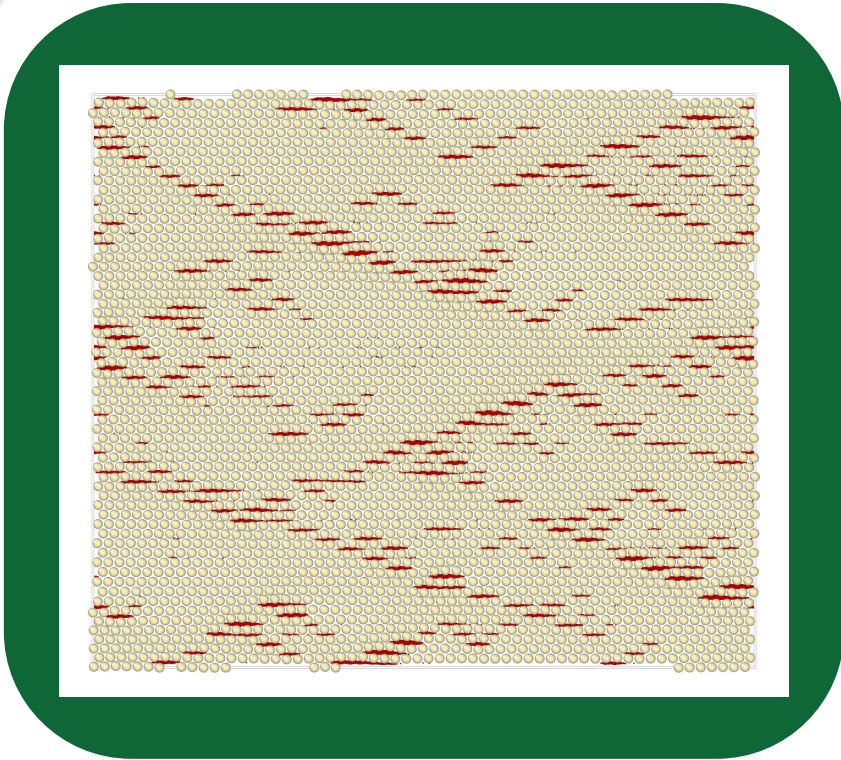


Small particles aggregate when driven in a network of large particles



A short movie of the system in our work: Small charged particles aggregate into clusters under a high electric field in the x-direction

Qian, D. & Olvera de la Cruz, M. Field-driven cluster formation in two-dimensional colloidal binary mixtures. *Phys. Rev. E* **107**, 1–9 (2023).

Scientific Achievement

In a two-dimensional size-asymmetric colloidal mixture, we found that the small particles will form clusters when driven by external fields.

Significance and Impact

The formation of clusters is the hallmark of pattern formations in nonlinear charge transport.

Research Details

- Clusters of small particles are found when the external driving force exceeds a critical value. The transition is from the well-known lane formation to this cluster state.
- A strong correlation between the vibrational motion of the host lattice and the mobile particles is found in the cluster state.