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## **WITHDRAWN - (POS-21) Effects of localization length and spatial disorder on a charge carrier mobility in organic disordered semiconductors**

*Tuesday 20 June 2023 17:30 (2 minutes)*

We investigate the transport properties of charge carrier disordered organic semiconductors with a focus on the determination and analysis of charge carrier mobility. By understanding that charge transport is due to incoherent hopping of charge carriers across localized states, we use a model that relates mobility to charge carrier (not small polarons) hopping by thermal activation. We consider the Miller–Abrahams expression to describe the hopping rate of charge carriers and employ kinetic Monte Carlo simulation methods to generate data from which we can analyze charge carrier mobility as a function of applied electric field, temperature, localization length, and spatial and energetic disorder parameters. Based on our results, we discuss the effects of these parameters on charge carrier mobility. Our results show the importance of the spatial disorder parameter and localization length in the effects of electric field dependence on charge carrier mobility, and we also evaluate the value of localization length that has been mostly considered as  $0.1b$ , where  $b$  is the lattice parameter.

### **Keyword-1**

charge transport

### **Keyword-2**

charge carrier dependent mobil

### **Keyword-3**

spatial disorder

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