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## Analysis of the Fabrication Conditions in Organic Field-Effect Transistors

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Polymer-based organic field-effect transistors have raised substantial awareness because they enable low-cost, solution processing techniques, and have the potential to be implemented in flexible, disposable organic electronic devices. The performance of these devices is highly dependent on the processing conditions, as well as the intrinsic properties of the polymer. Processing conditions play an important role in semiconductor film formation and device performance. These factors may provide an important link between structure and performance. In this study, an empirical analysis tool, Process Scout, was applied to assess processing factors such as polymer concentration and silicon modification. This sanctioned the creation of a realistic optimization model because common variance was not assumed and the mobility was capably analyzed in the real space. After the analysis of the processing conditions, it was evident that further study on the effect of humidity on performance must be conducted to account for the variance between similarly fabricated devices. The developed process may be applied to expand the study of other organic semiconductors. This process is the first step in creating a standard fabrication protocol, allowing organic field-effect transistors to prosper.

### KEYWORDS

Organic Field-Effect Transistor, Processing, Fabrication, OFET, Charge Carrier Mobility, Optimization