Editorial

Welcome to the second issue of this volume of ***Electronic Devices***. In this issue, we highlight three compelling papers addressing the evolving complexities of modern power grids, electric vehicle infrastructure, and semiconductor materials science.

We begin with **"*GFM Inverter Control Loop Analysis of an EMT Based Transmission Distribution Testbed for High-IBR Protection Studies.*"** The rapid integration of inverter based resources (IBRs) is fundamentally reshaping power system dynamics and protection behaviors. To address this, the authors present a detailed control-loop analysis of a Grid-Forming (GFM) inverter model using the open-access PNNL PSCAD/EMTDC testbed. By enforcing IEEE 1547 and IEEE 2800 ride-through requirements alongside WECC-compliant models, this study provides a vital, structured foundation for future EMT simulations to evaluate protection performance as IBR penetration continues to surge.

Next, in **"*SFU-EVP: A Longitudinal Open-Access Dataset of Electric Vehicle Charging Sessions for Grid and Behavioural Analysis,*"** the focus turns to the practical realities of EV adoption. Analyzing 91,518 charging sessions across 32 stations at Simon Fraser University, the authors investigate station-level utilization and idle-time behaviors. Their research yields a crucial insight for urban planners: effective infrastructure strategy must balance capacity expansion at high-demand hubs with behavioral interventions to reduce idle occupancy elsewhere. This shifts the critical question from *how much* infrastructure we need to *how effectively* we can utilize what we already have.

Finally, the issue concludes with **"*Hierarchical Descriptor Analysis for Electronic Property Vector Classification in Semiconductors: Limited Discriminatory Power of Atomic, Structural, and Energetic Features.*"** Moving to the fundamental materials level, the authors test the ability of hierarchical descriptors to classify semiconductors into three Electronic Property Vector (EPV) categories: Band Gap, Conduction Band Minimum, and Valence Band Maximum. The results are revealing: univariate analysis shows that no individual descriptor achieves meaningful class separation, with the strongest energetic descriptor accounting for just 0.11% of the EPV variance. These findings establish that current low level descriptors offer only marginal discriminatory power, highlighting a clear avenue for future research in materials informatics.

We hope these papers highlight the growing research intensity in our field and provide valuable insights for your work.

Editors