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Investigating the effect of dielectric constant and ion mobility in light emitting electrochemical cells LYNDON BASTATAS, Physics Department, Oklahoma State University, MATTHEW MOORE, Department of Chemistry, The University of Texas at Austin, JASON SLINKER, Physics Department, University of Texas - Dallas — Light emitting electrochemical cells (LEECs) are promising low-cost technologies for display and solid state lighting. A certain type of these devices can be made from a combination of complex emitters made from transition metal complexes and counterions. We investigated the effect of different negative counterions paired with iridium emitters on the performance of the devices. By performing impedance spectroscopy, we were able to estimate the mobility of the ions and the dielectric constant of the film. We complemented the experimental results with simulation studies using a drift-diffusion model where the recombination of electrons and holes is facilitated by a Langevin process. Ultimately, using different counterions yields slightly different values of dielectric constants and ion mobilities that affect their performance.

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