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Tunable Magneto-conductance and Magneto-electroluminescence in Polymer Light-Emitting Electrochemical Planar Devices[1] RUGANG GENG, Department of Physics & Astronomy, University of Georgia, Athens, GA 30602, USA, NICHOLAS MAYHEW, The University of Georgia, THO NGUYEN, Department of Physics & Astronomy, University of Georgia, Athens, GA 30602, USA, THO NGUYEN TEAM — We report first time studies of magneto-conductance (MC) and magneto-electroluminescence (MEL) in polymer light-emitting electrochemical *planar devices* using "super-yellow" poly-(phenylene vynilene), SY-PPV. We observed consistent negative MC while MEL changes sign to positive when electroluminescence quantum efficiency increases (ELQE). At optimal ELQE, the MC has a much narrower width than MEL indicating that MC and MEL do not share a common origin. However, MC reverses and has the same width as MEL when exposed to a threshold laser power depending on the applied voltage. In addition, MC reduces its magnitude when the device current increases at constant illumination power. We discuss the results in the context of the existing models. We show that the e-h pair model can explain the positive MEL and MC while the negative MC can be explained by the bipolaron model.

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