Title:	Enhanced Charge Transport in Two-Dimensional Materials through Light–Matter Strong Coupling
Authors:	Bhatt, Pooja (/jspui/browse?type=author&value=Bhatt%2C+Pooja) Kaur, Kuljeet (/jspui/browse?type=author&value=Kaur%2C+Kuljeet) George, Jino (/jspui/browse?type=author&value=George%2C+Jino)
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Abstract:	Strong light–matter interaction of functional materials is emerging as a promising area of research. Recent experiments suggest that material properties like charge transport can be controlled by coupling to a vacuum electromagnetic field. Here, we explored the design of a Fabry–Perot cavity in a field-effect transistor configuration and studied the charge transport in two-dimensional materials. The optical and electrical measurements of strongly coupled WS2 suggest an enhancement of electron transport at room temperature. Electron mobility is enhanced more than 50 times at ON resonance conditions. Similarly, Ion/Ioff ratio of the device increased by 2 orders of magnitude without chemical modification of the active layer. Cavity tuning and coupling strength-dependent studies support the evidence of modifying the electronic properties of the coupled system. A clear correlation in the effective mass of the polaritonic state and Schottky barrier height indicates a collective nature of light–matter interaction.
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