

Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

High circular polarization in a MoSe₂ light-emitting transistor MASARU ONGA, YIJIN ZHANG, RYUJI SUZUKI, YOSHIHIRO IWASA, Quantum-Phase Electronics Center (QPEC) and Department of Applied Physics, The University of Tokyo — The exclusive coupling between the valley degree of freedom and the optical helicity is a unique phenomenon in transition metal dichalcogenides (TMDs), and thus the circularly polarized luminescence is one of the main research topics in these materials. MoSe₂, however, is known to exhibit exceptionally low polarization in photoluminescence (PL). Here, we report electroluminescence (EL) properties of MoSe₂ demonstrating electrical switching of the optical helicity in the same manner as WSe₂ [1]. More importantly, the observed polarization in EL is one order of magnitude higher than that in PL. The present results reveal that the mechanism of EL polarization possesses the intrinsic robustness against intervalley scattering. [1] Y. J. Zhang, et.al., Science 344, 725 (2014).

Masaru Onga
Quantum-Phase Electronics Center (QPEC) and Department of Applied Physics, The University of Tokyo

Date submitted: 06 Nov 2015

Electronic form version 1.4