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Microcavity Enhanced Second Harmonic Generation of MoS₂

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Two dimensional semiconductor materials promise to be nanometer-scale building blocks for next generation opto-electronic technologies because of their novel optical properties such as valley dependent emission, strong photoluminescence, and giant nonlinear response. We show the nonlinear efficiency of monolayer MoS₂, can be enhanced by embedding MoS₂ within an all-dielectric Fabry-Perót microcavity. Power dependency shows a 10-fold increase in second harmonic generation when the embedded 2D material is resonantly enhanced at the pump wavelength matching theoretical estimate.