Abstract Submitted
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**Silicon-nitride photonic circuits interfaced with monolayer MoS2**[1]
TEODOR K. STANEV, GUOHUA WEI, NATHANIEL P. STERN, Department of Physics and Astronomy, Northwestern University, DAVID A. CZAPLEWSKI, IL WOONG JUNG, Center for Nanoscale Materials, Argonne National Laboratory — Monolayers of transition metal dichalcogenides exhibit interesting low-dimensional opto-electronic phenomena and large optical interactions. Harnessing these features for modulating light requires interfacing these monolayer semiconductors with photonic devices. Here, we show the integration of monolayer molybdenum disulphide ($MoS_2$) with silicon nitride ring microresonators using a visco-elastic layer transfer [2]. Cavity transmission is used to measure the coupling of the monolayer evanescently coupled to the ring resonator. A linear absorption coefficient of 850 dB/cm is observed in this geometry, which is larger than that of graphene and black phosphorus with the same thickness. These assembly methods can be applied to a diverse catalog of monolayer materials for assembling hybrid optoelectronic devices over a wide spectral range.

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[2]G. Wei, T. K. Stanev, D. A. Czaplewski, I. W. Jung, and N. P. Stern. *Appl. Phys. Lett.* **107**, 091112 (2015)

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