**Toward chiral spin-photon interface**

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In the non-paraxial regime of light, spin and angular momentum cannot be separated but are coupled, the so-called spin-orbit interaction of light. This realization has sparked a tremendous activity in the optics community in the last couple of years. One novel consequence of this spin-orbit interaction of light is spin-controlled directional coupling of light. Here, we demonstrate the valley(spin)-dependent directional emission of transition metal dichalcogenides (TMD) into plasmonic eigenstates of a silver nanowire. A monolayer of TMD materials has direct bandgaps consisting of two (energy-degenerate) valleys at the corners of the Brillouin zone (K, K’), which provide an opportunity to manipulate the additional degree of freedom, i.e., the valley degree of freedom. And valley information can be optically addressed and detected using the spin angular momentum of light, due to their valley-dependent optical selection rule. The highly confined mode of a plasmonic nanowire provides a high degree of local transverse optical spin, and its handedness is locked to the propagation direction of the mode. As a result, the emission from the two different valleys of TMDs material will couple to the plasmonic modes propagating in opposite directions. The high valley polarization of TMD and high density of the transverse optical spin of the plasmonic wire together offer a novel platform for a chiral network even at room temperature without any magnetic fields. This result paves the way towards a new platform for exploiting a valley pseudospin in integrated valleytronics devices using nanophotonics structures.