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**Near-Field Generation and Detection of Surface Plasmon Polaritons on Silver Nanowires** CHUN YU, ABRAM FALK, ALAN DIBOS, FRANK KOPPENS, Harvard University, KIBUM KANG, MOON-HO JO, Pohang University of Science and Technology, MIKHAIL LUKIN, HONGKUN PARK, Harvard University — Chemically-grown silver nanowires are highly crystalline and excellent waveguides for surface plasmon polaritions (SPPs). As their radii approaches the nanowire limit, their SPP modes become highly confined, but it becomes increasingly difficult to scatter light into and out of these modes. We demonstrate nanowire junction-based techniques for generating and detecting SPPs in the near field, thereby circumventing the need for scattering. For near-field SPP generation, we use a silver nanowire as both an SPP waveguide and an electrode for an electroluminescent Schottky junction. For near-field SPP detection, the silver nanowire doubles as a local gate for a photosensitive nanowire. We discuss the mechanism of SPP generation and detection, including a gain mechanism in the detector and a memory effect in the emitter, which is related to filamentary current paths.

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