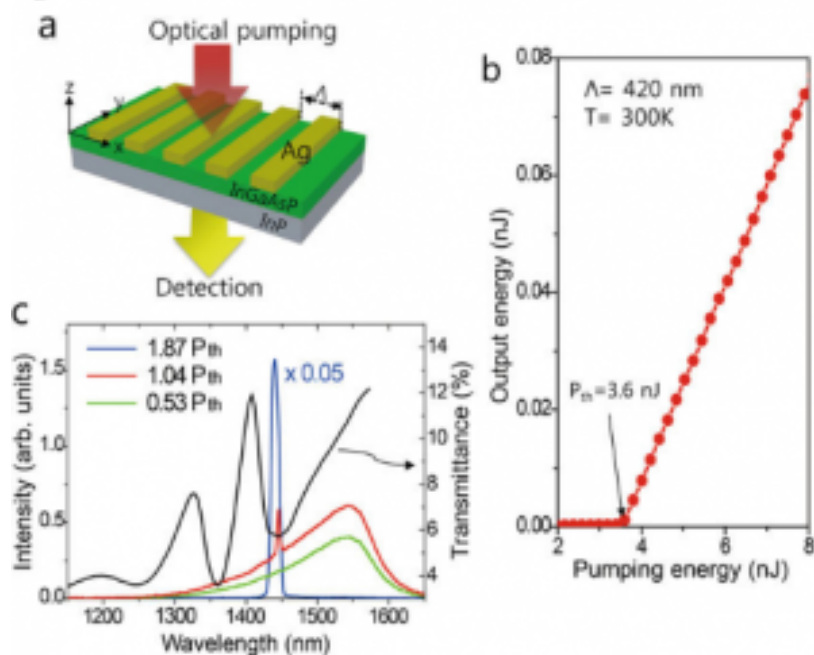


# Broadband Surface Plasmon Lasing in One-dimensional Metallic Gratings on Semiconductor

Figure 1



They report surface plasmon (SP) lasing in metal/semiconductor nanostructures, where one-dimensional periodic silver slit gratings are placed on top of an InGaAsP layer. The SP nature of the lasing is confirmed from the emission wavelength governed by the grating period, polarization analysis, spatial coherence, and comparison with the linear transmission. The excellent performance of the device as an SP source is demonstrated by its tunable emission in the 400-nm-wide telecom wavelength band at room temperature. They show that the stimulated emission enhanced by the Purcell effect enables successful SP lasing at high energies above the gap energy of the gain. They also discuss the dependence of the lasing efficiency on temperature, grating dimension, and type of metal.

**Source:** <https://www.nature.com/articles/s41598-017-08355-6>

**Related paper:** Seung-Hyun Kim et al., Broadband Surface Plasmon Lasing in One-dimensional Metallic Gratings on Semiconductor, *Scientific Reports* **7**, Article number: 7907, (2017).