# *Supporting Information*

# Coupled nanoantenna plasmon resonance spectra from two-photon laser excitation

Matthias D. Wissert,[†] Konstantin S. Ilin,[‡] Michael Siegel,[‡] Uli Lemmer,[†] and Hans-Jürgen Eisler[*,†]

*DFG Heisenberg Group 'Nanoscale Science', Light Technology Institute (LTI), Karlsruhe Institute of Technology (KIT), Karlsruhe, Germany, and Institute for Micro- und Nanoelectronics Systems (IMS), Karlsruhe Institute of Technology (KIT), Karlsruhe, Germany*

E-mail: hans.eisler@lti.uni-karlsruhe.de

As the two-photon nature of the excitation is the most important basis for our analysis, we provide in Figure 1 the double-logarithmic power curves for three more coupled antennas of arm lengths 60, 55, and 50 nm. For all three, the fitting line slope is on the order of two. This is additional evidence that truly a two-photon process is observed. All measurement points were obtained by positioning the laser focus exactly over the antenna (using the raster scanning stage) and then increasing the excitation laser power from the lowest to the highest values. The smaller the structures, the higher the laser power that can be used before saturation of the single photon detectors. Evidently, the largest structures also yield the highest emission intensity for a given excitation power.

[*]To whom correspondence should be addressed
[†]LTI, DFG Heisenberg Group
[‡]IMS

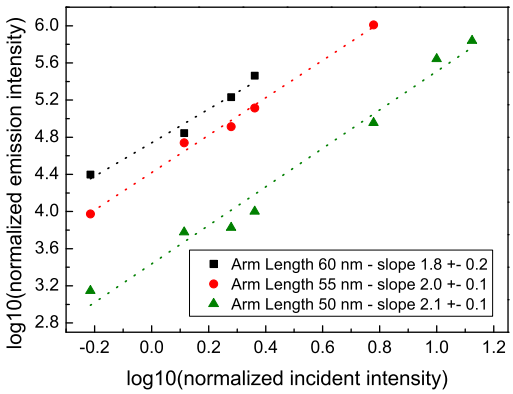


Figure 1: Double-logarithmic power dependency curves for coupled antennas of arm length 60, 55, and 50 nm. Measurement data as points, fitting curves as dashed lines. The corresponding slope and errors are found in the description box.