Supporting information for:

Direct phase mapping of the light scattered by single plasmonic nanoparticles

Otto Hauler,[a] Frank Wackenhut,*[a] Lukas A. Jakob,[a] Alexander Stuhl,[a] Florian Laible,[b,c] Monika Fleischer,[b,c] Alfred J. Meixner, *[a,c] and Kai Braun*[a,c]

The gold nanorods (GNRs) used in this work are prepared by electron beam lithography as described in the sample preparation section of the main text. The GNRs are arranged in a 10x10 array, and a section of such an array is presented in Figure S1(a).

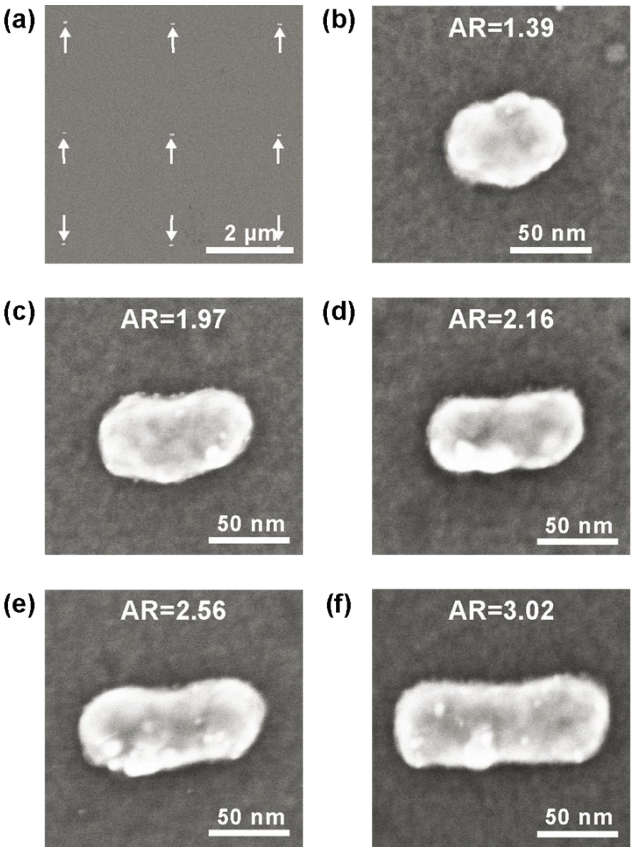

Figure S1: (a) Electron micrograph of part of a gold nanorods array. The individual GNRs are indicated by the white arrows. (b)-(f) Electron micrographs of individual gold nanorods with aspect ratios ranging from 1.39 to 3.02 as depicted on top of the images.

Figure S1 (a) shows that the GNRs (indicated by the white arrows) are well separated and their distance is large enough to address each GNR individually. Figure S1 (b)-(f) displays GNRs with aspect ratios ranging from 1.39 to 3.03 as indicated on top of each electron micrograph. The short axis of each GNR was kept constant at 45 nm and the radius of curvature is approximately 15 nm. Deviations in length and width of ±5 nm can be observed, due to the resolution limit of the electron beam lithography. The corresponding photoluminescence spectra are presented in Figure S2 (a).

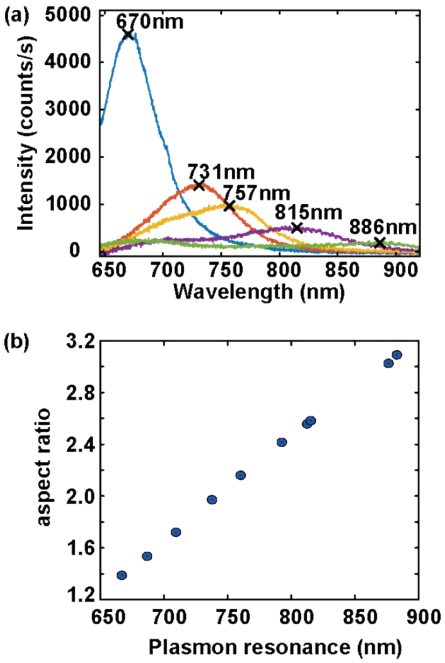

Figure S2: (a) Photoluminescence spectra of the GNRs shown in Fig. S1 (b)-(f). A redshift of the longitudinal plasmon mode can be observed for increasing aspect ratio. The corresponding luminescence maxima are λ_{max} = 670 nm for AR = 1.39, λ_{max} = 731 nm for AR = 1.97, λ_{max} = 757 nm for AR = 2.16, λ_{max} = 815 nm for AR = 2.56 and λ_{max} = 886 nm for AR = 3.02. (b) shows the linear relation between the photoluminescence maximum and the aspect ratio of the GNRs.

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