

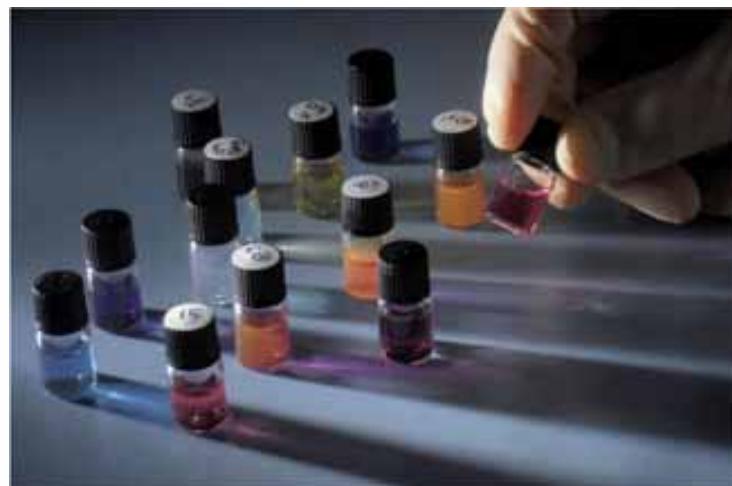


Single Nanoparticle Biosensorics

Thomas Schneider, Norbert Jahr, Andrea Csaki,
Wolfgang Fritzsche

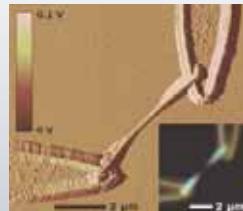
fritzsche@ipht-jena.de

Institute of Photonic Technology (IPHT), Nano Biophotonics Department,
Jena, Germany

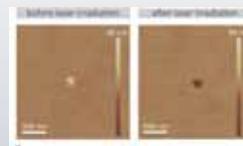




Single (Metal) Nanoparticle Biosensorics

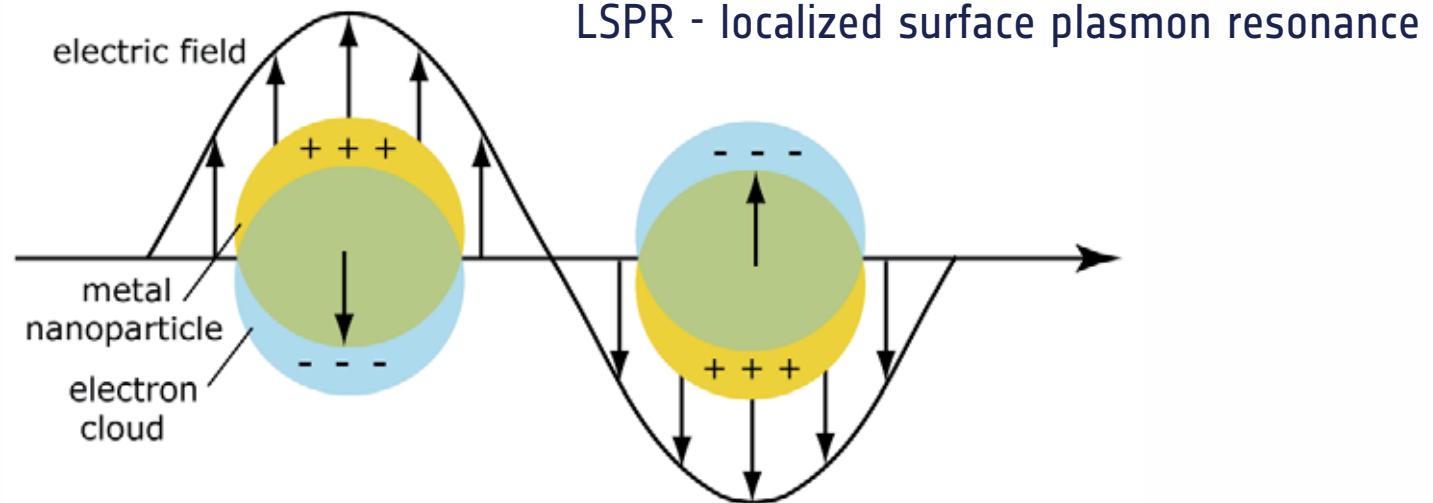


Single (Semiconductor) Nanowire Biosensorics



Single Nanoparticle Antenna

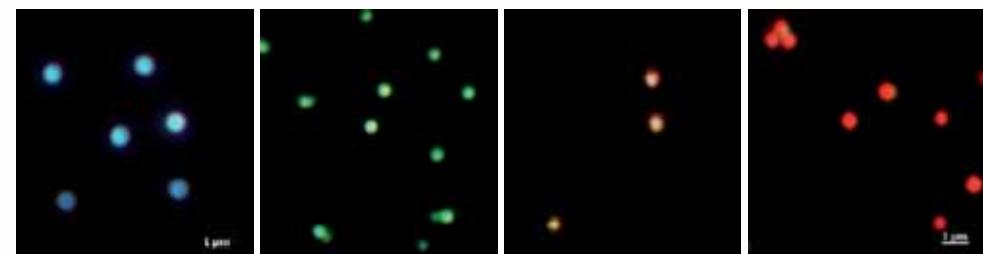
Interaction of Ag/Au Nanoparticles with Light



ensemble

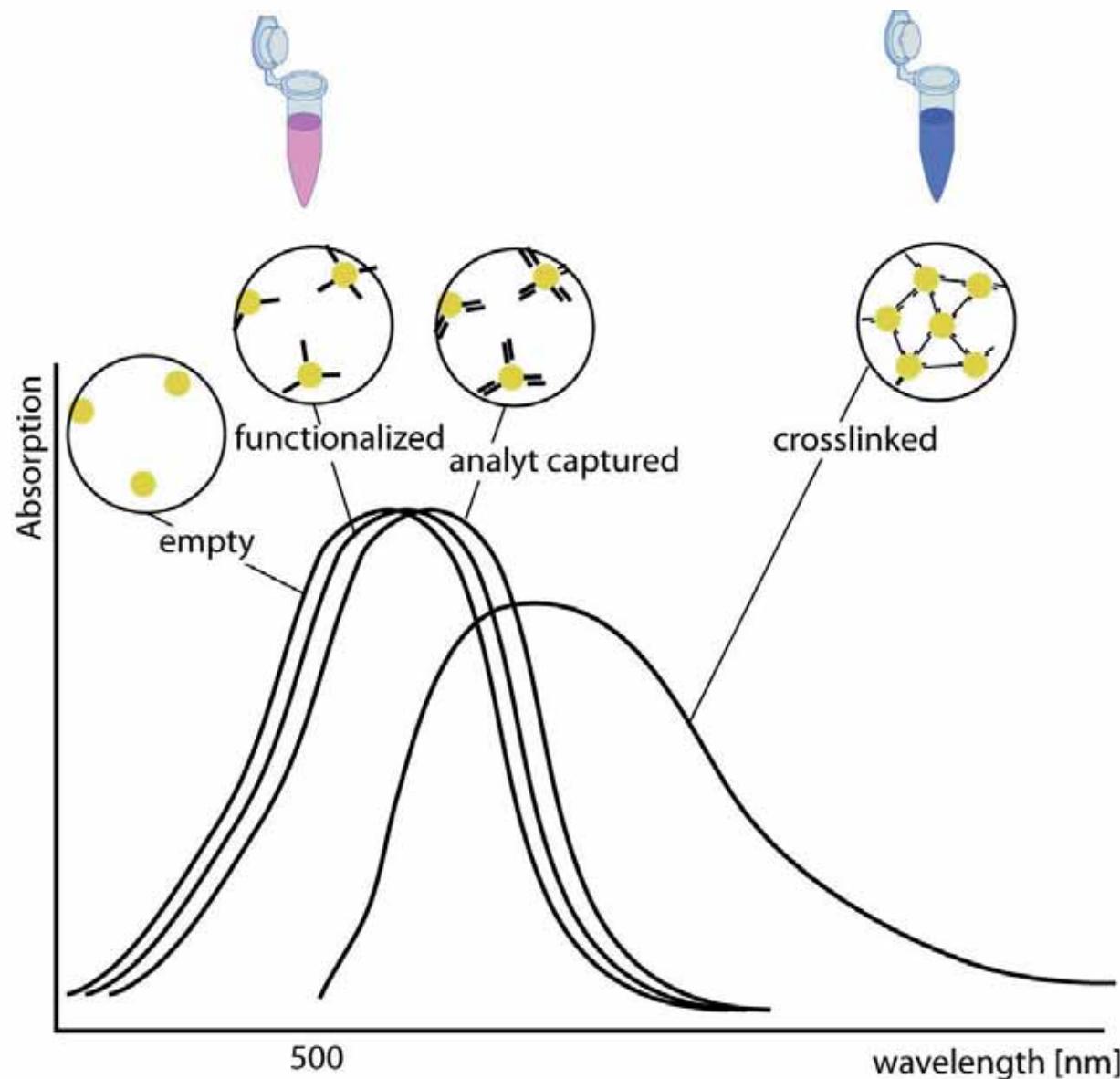


single nanoparticle

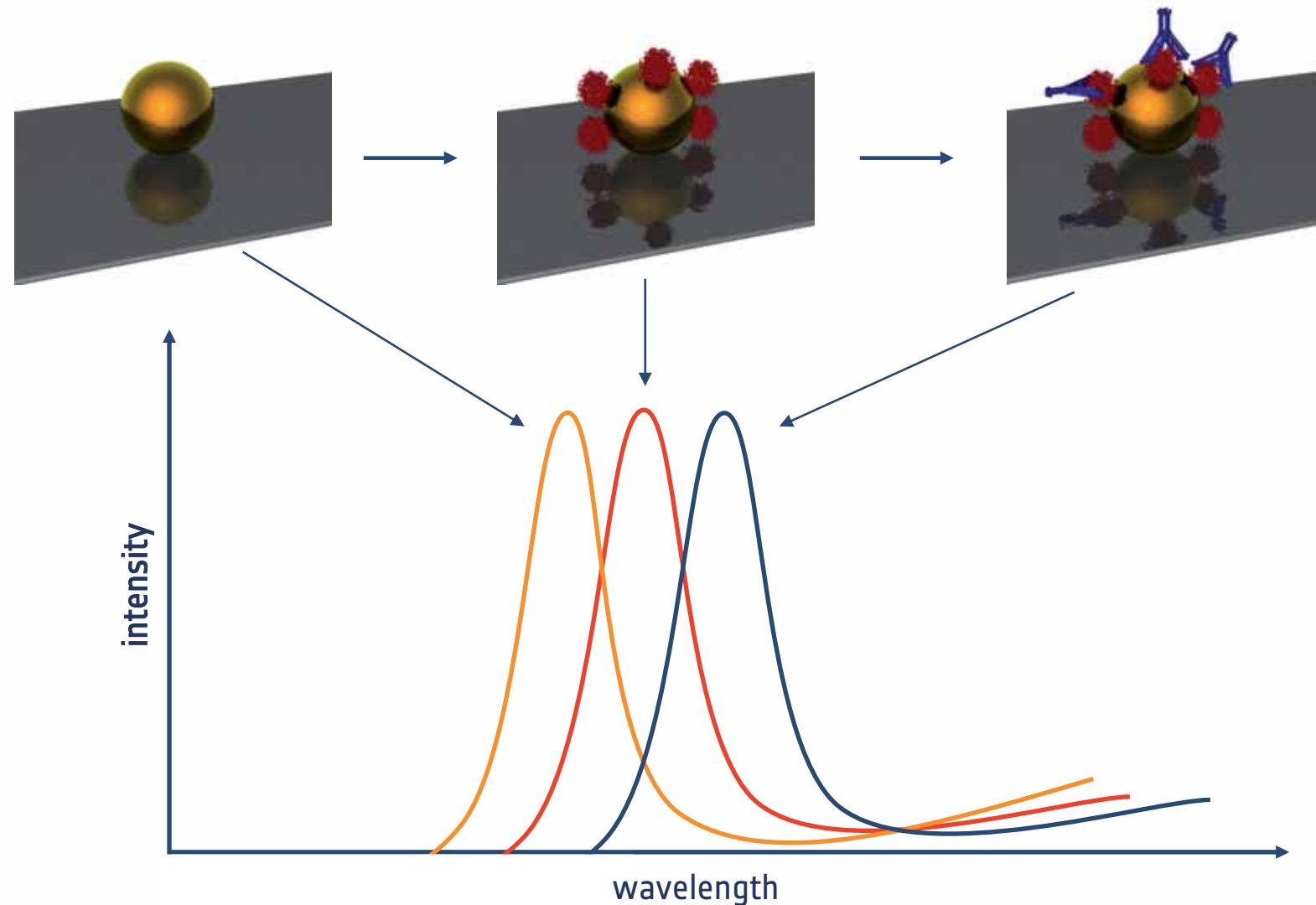


Mie 1908 Ann Phys

Kreibig/Vollmer 1995 Optical Properties of Metal Clusters Vol. 25. Springer, Heidelberg



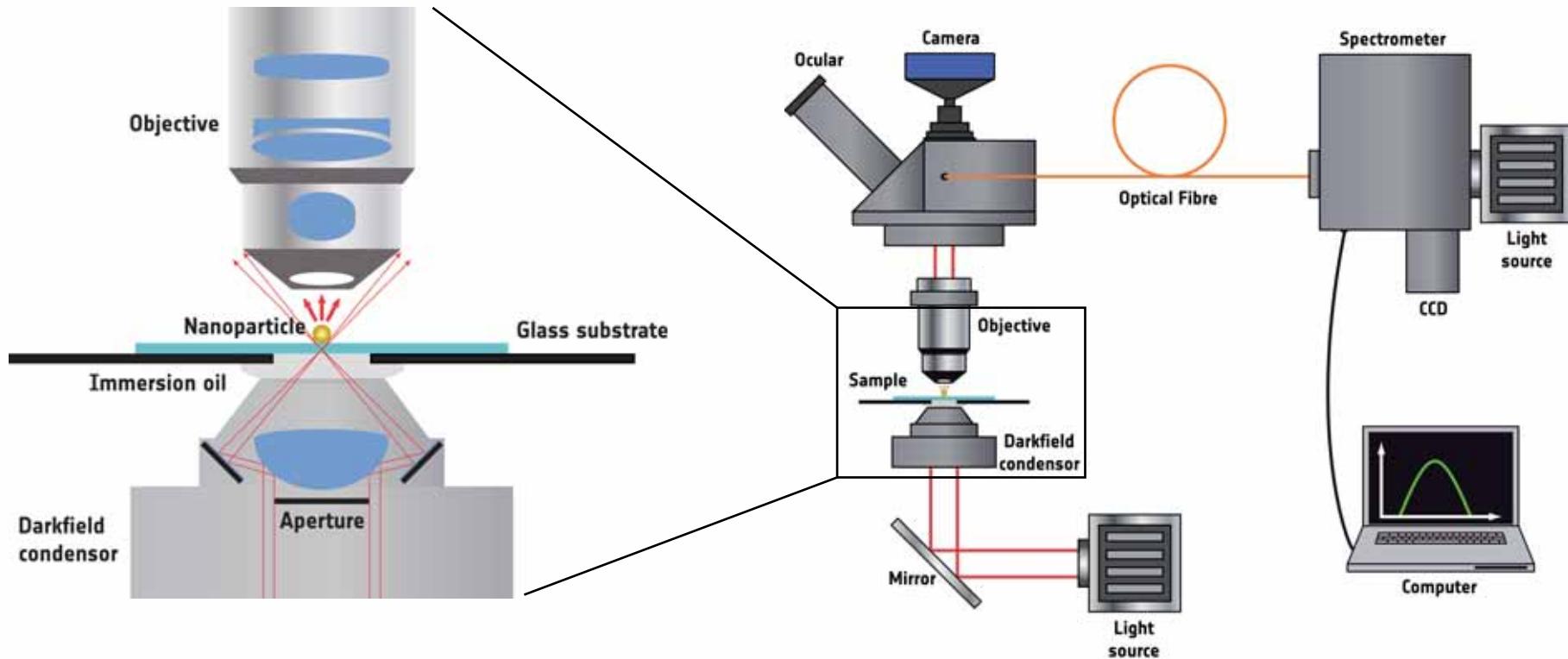
Mirkin, C. A., et al. (1996). Nature **382**: 607
Alivisatos, A. P., et al. (1996). Nature **382**: 609



Nanoparticles...



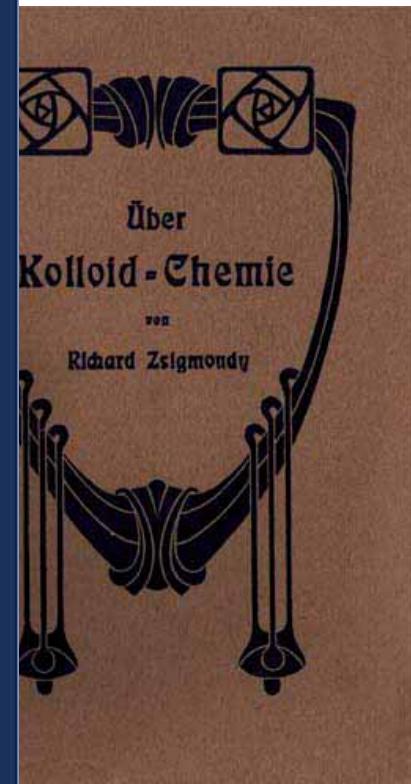
Single particle spectroscopy





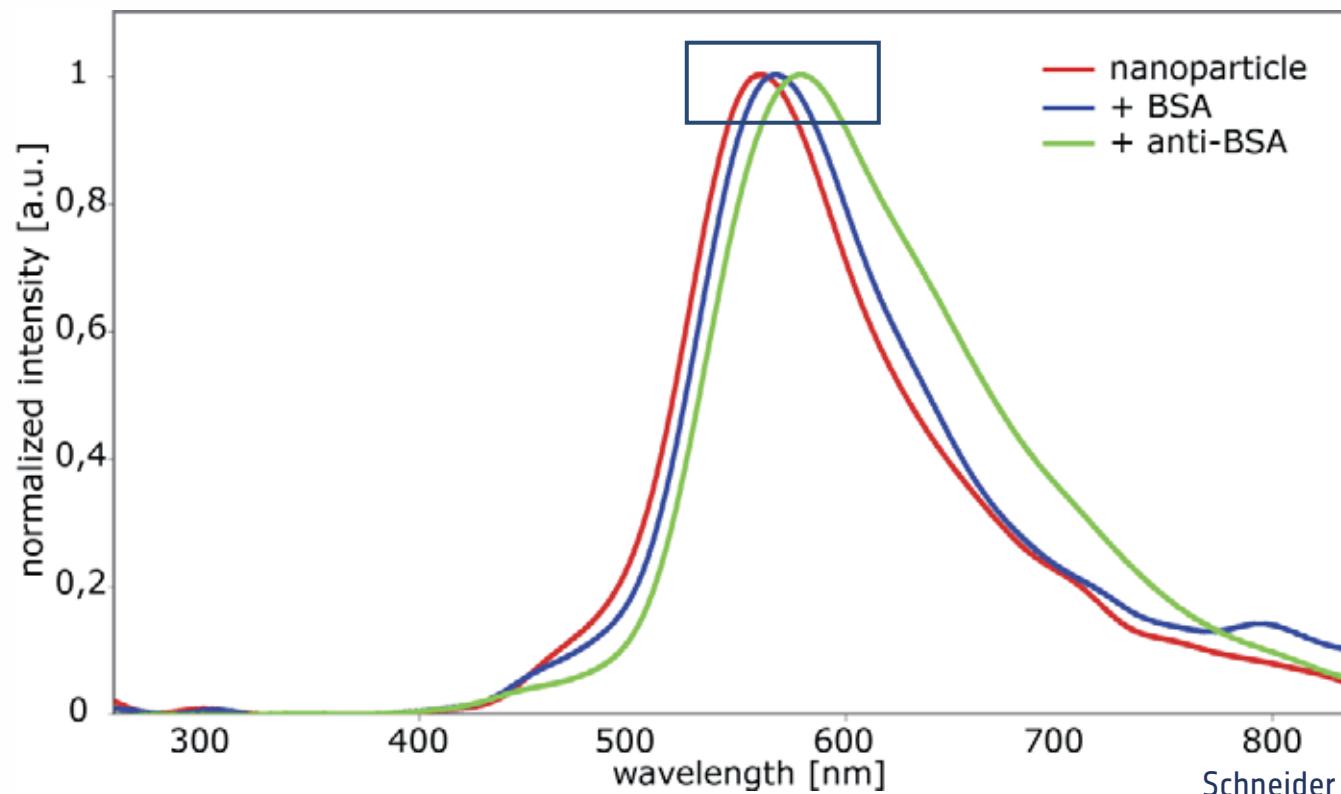
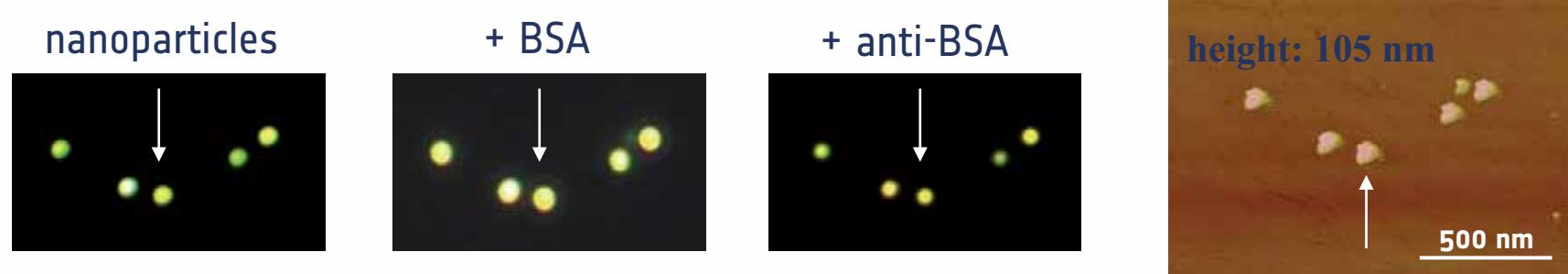
100 YEARS OF NANOSCIENCE WITH THE ULTRAMICROSCOPE

THE WORK OF RICHARD ZSIGMONDY
INTRODUCED BY
CARSTEN SÖNNICHSEN AND WOLFGANG FRITZSCHE



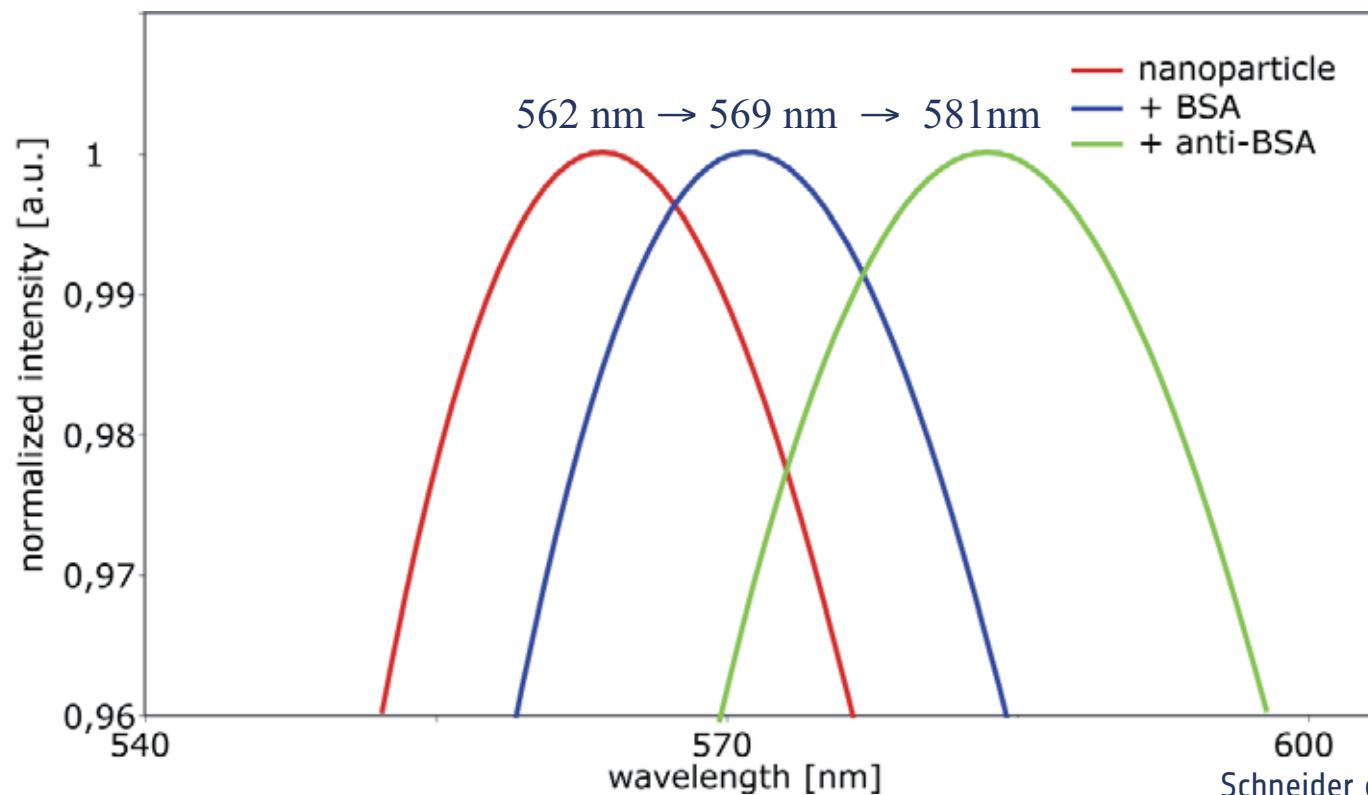
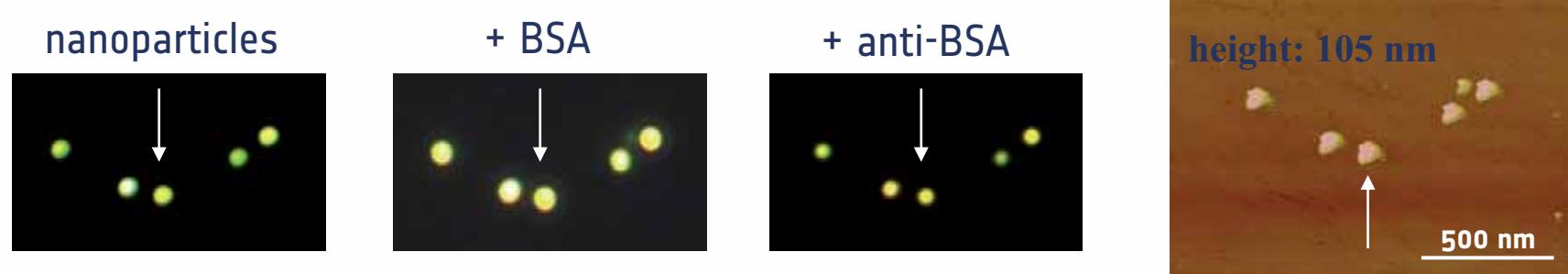
1907

Single-particle measurements: Proteins



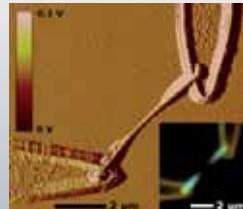
Schneider et al. (in preparation)

Single-particle measurements: Proteins



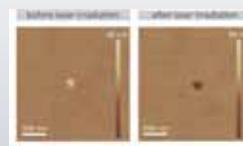


Single (Metal) Nanoparticle Biosensorics



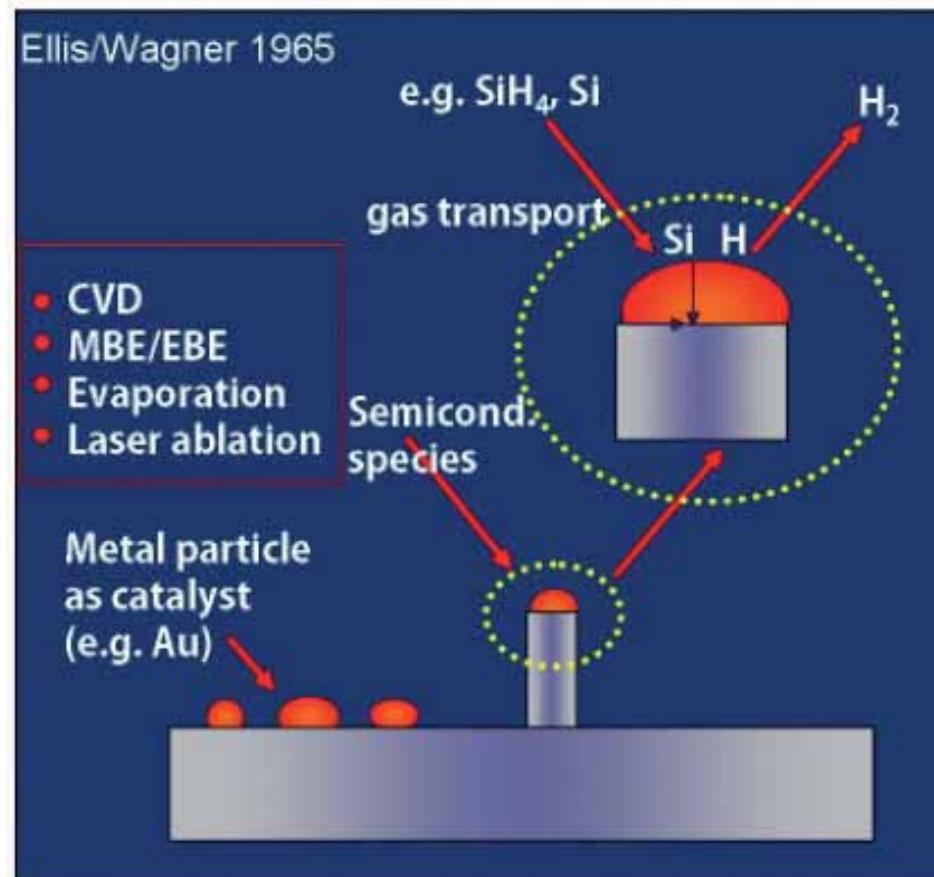
Single (Semiconductor) Nanowire Biosensorics

Christian Leiterer, Gerald Brönstrup, Silke Christiansen



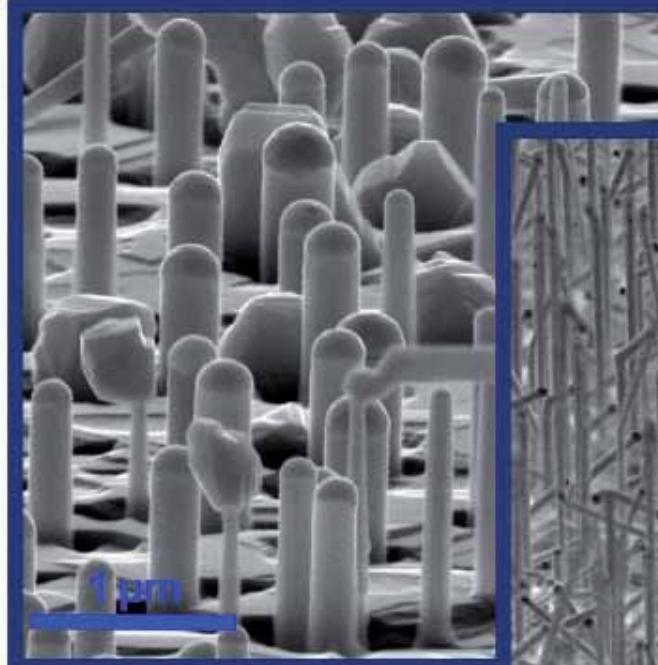
Single Nanoparticle Antenna

Preparation of Si-Nanowire (SiNW)

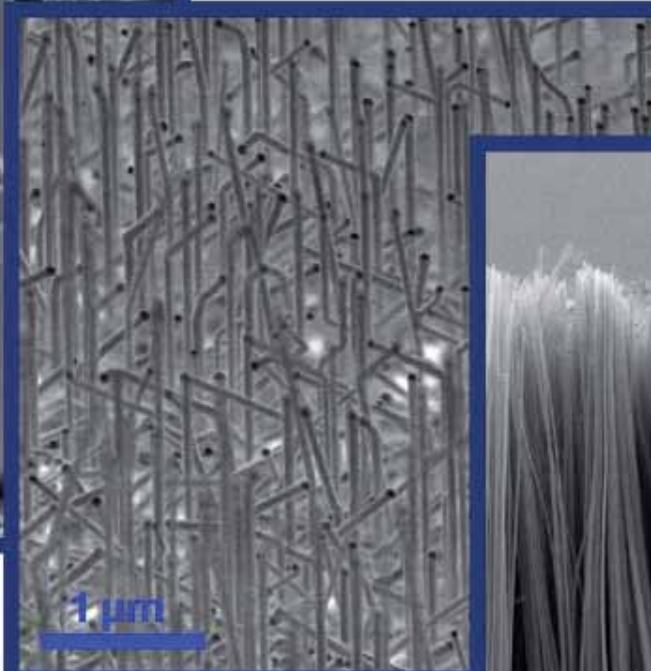


Si-NW

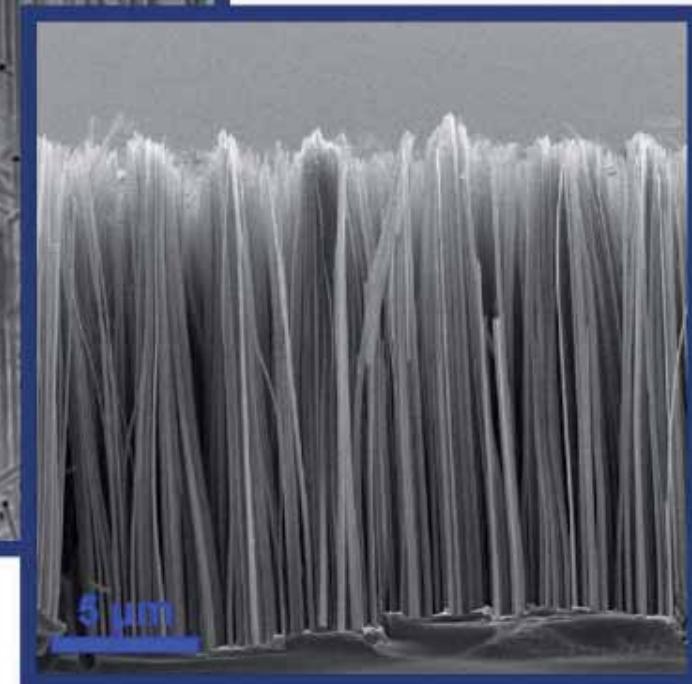
EBC:
Au-catalysiertes VLS Wachstum



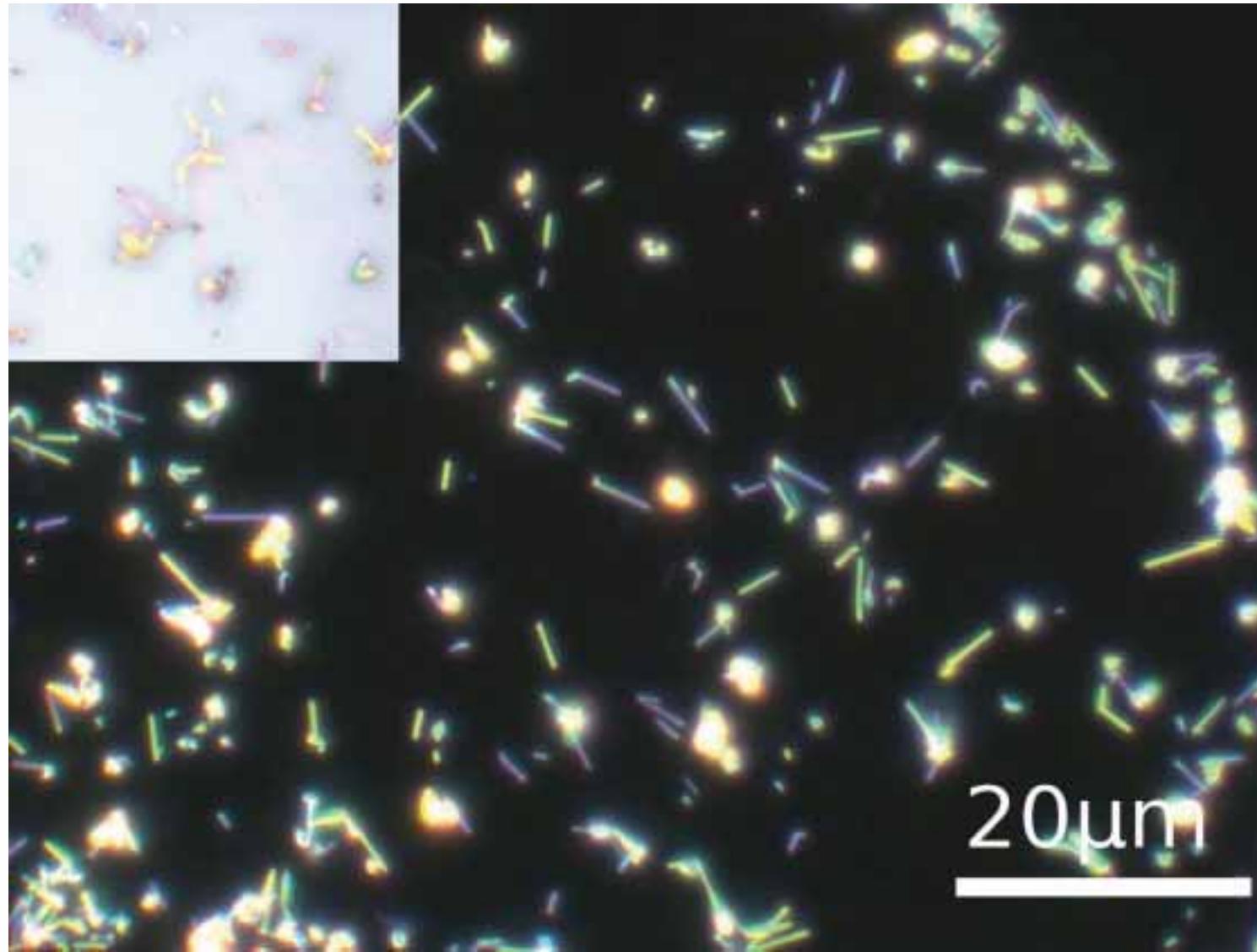
CVD:
Au-catalysiertes VLS Wachstum



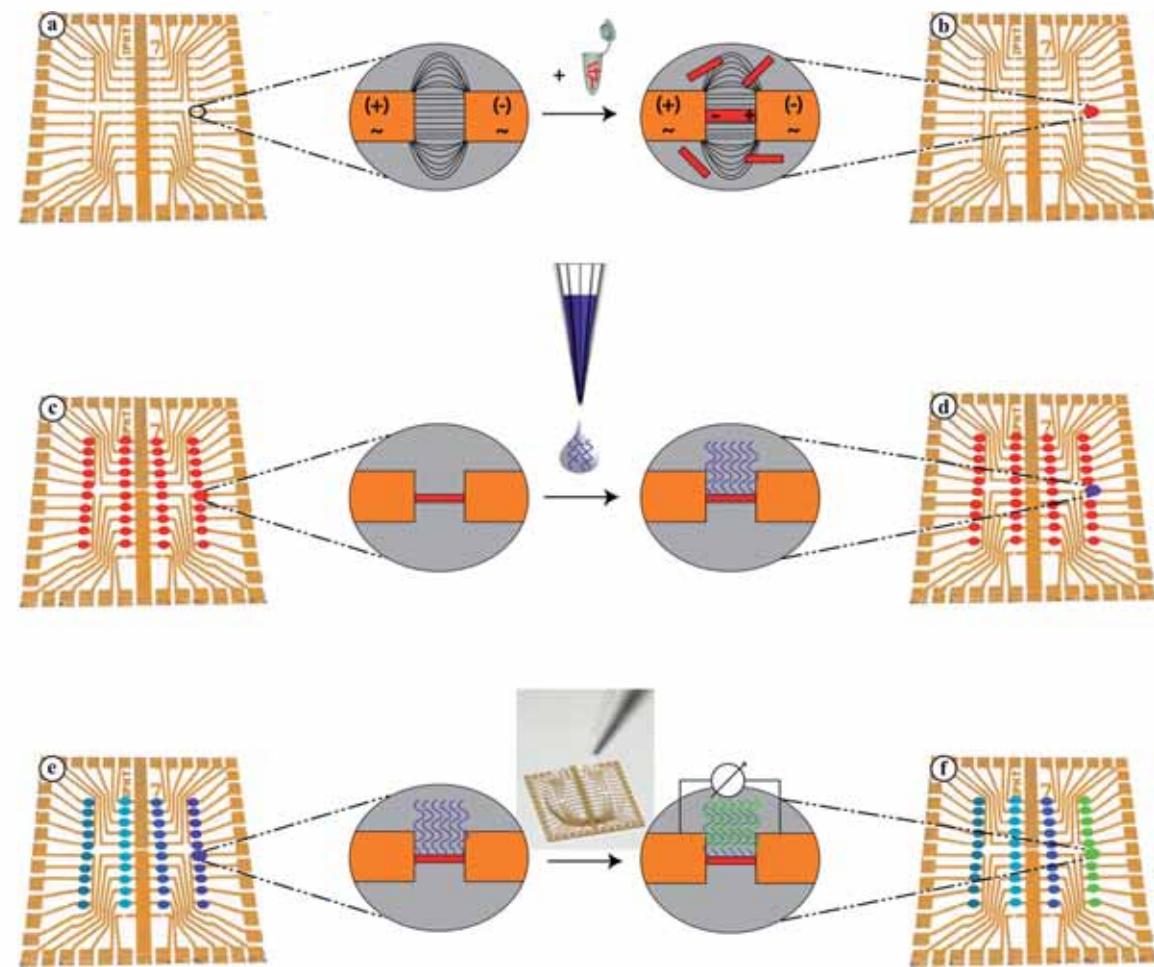
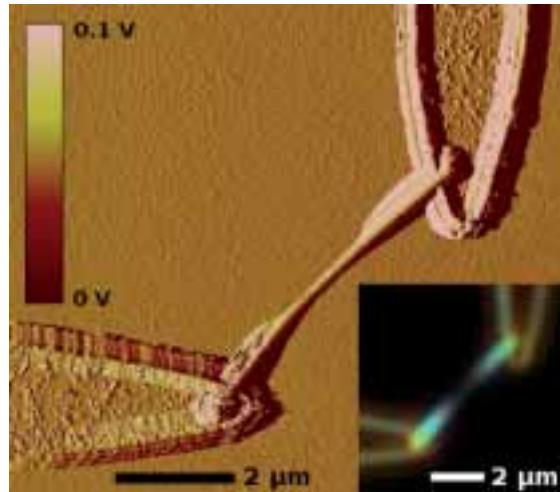
nass-chemisch geätzt



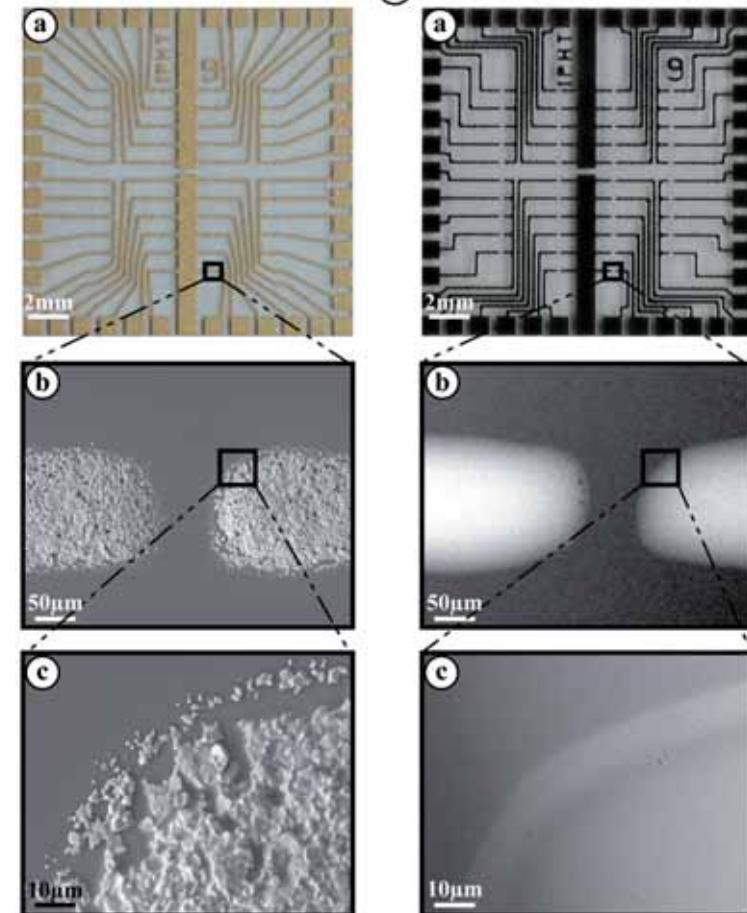
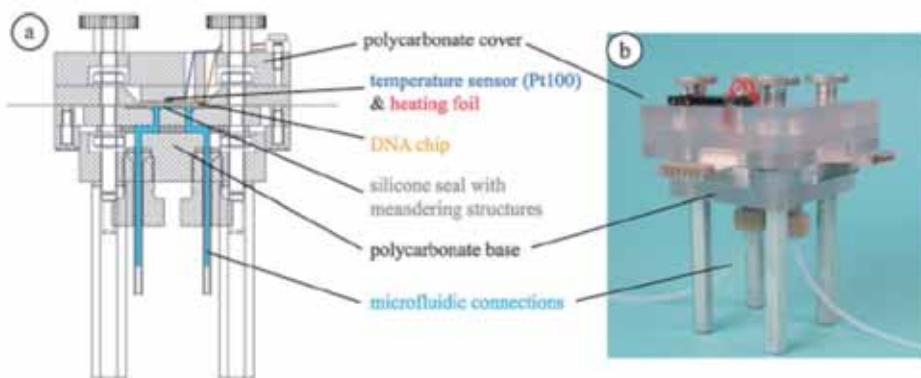
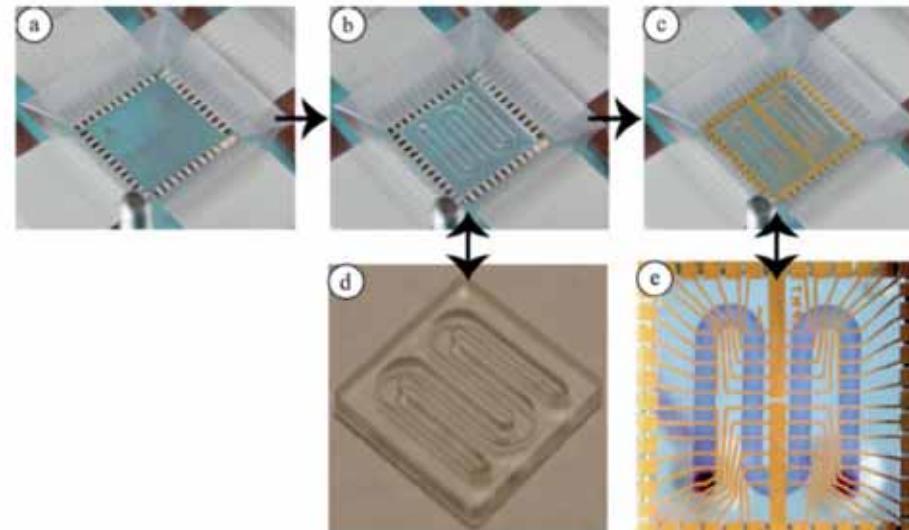
Si-NW in dark field (scattering) contrast



Si-NW for electrical bioanalytics

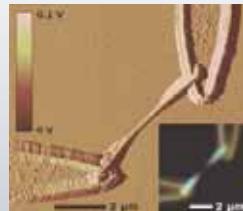


Microarray chip substrate & Microfluidics

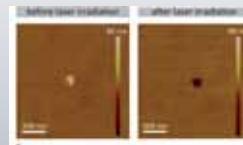




Single (Metal) Nanoparticle Biosensorics



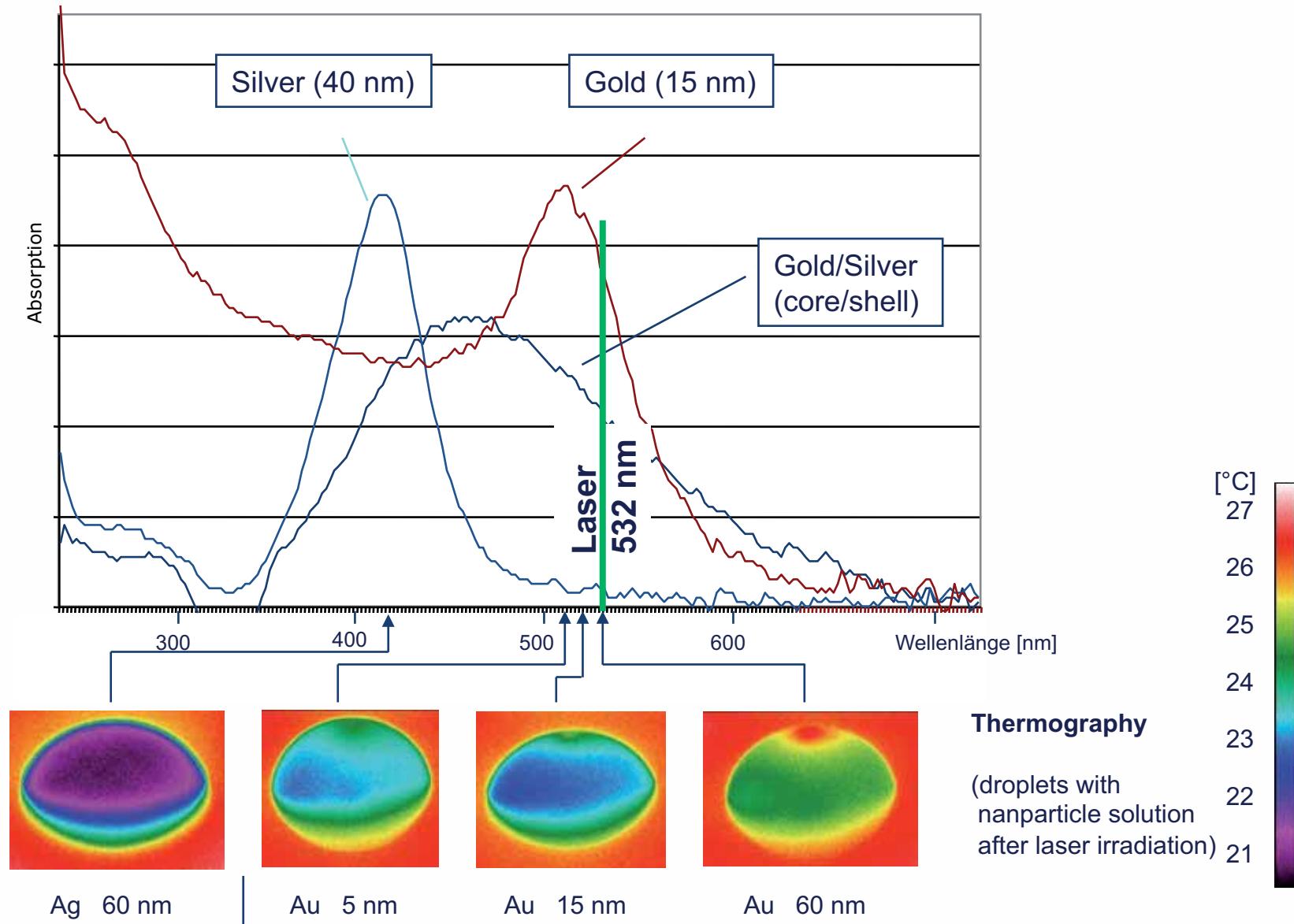
Single (Semiconductor) Nanowire Biosensorics



Single Nanoparticle Antenna

Janina Wirth, Frank Garwe, Alla Nykytenko

Optical Properties of Particles



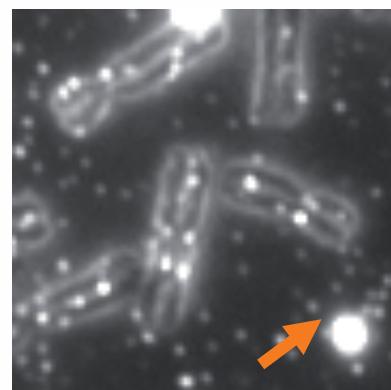
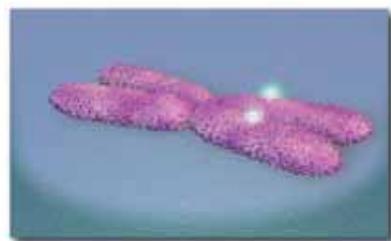
Optically-induced nanolocal manipulation: Metaphase Chromosome

13.10.2010

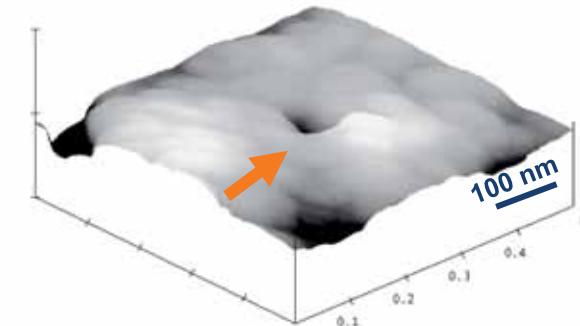
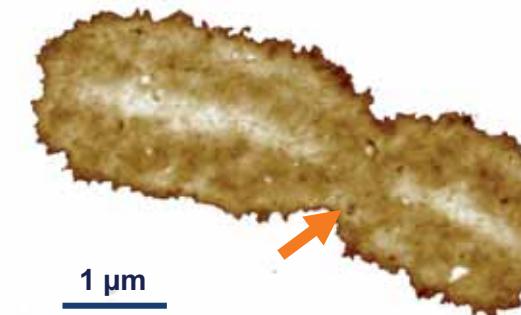
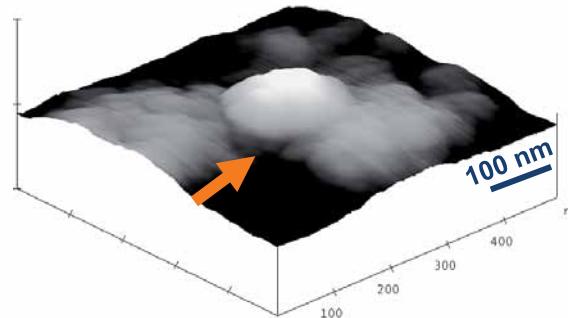
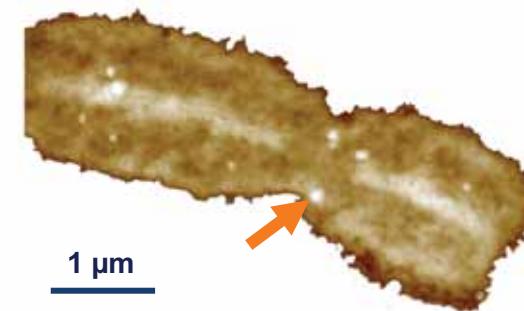
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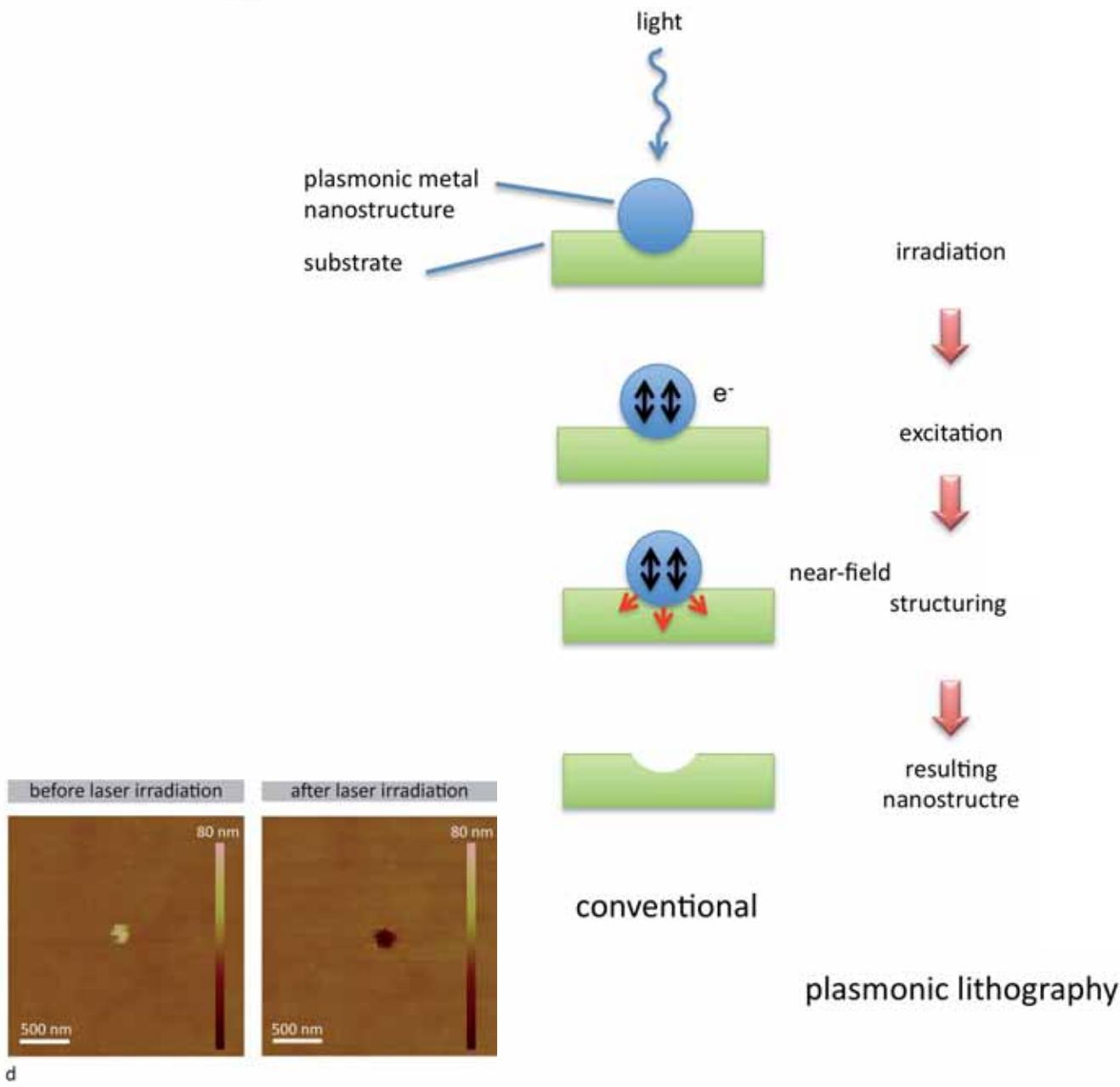


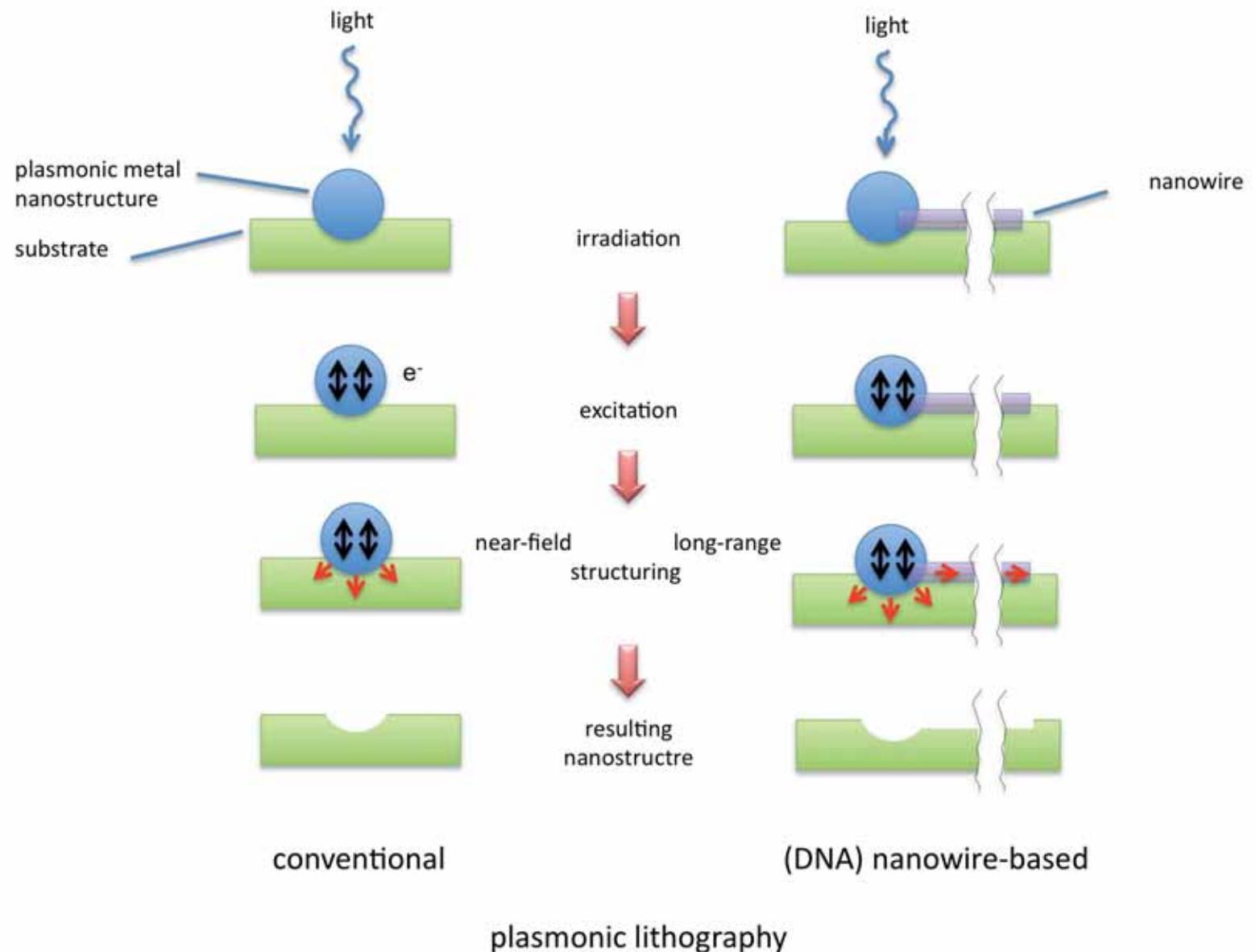
Frank Garwe, Karsten König (JenLab GmbH)



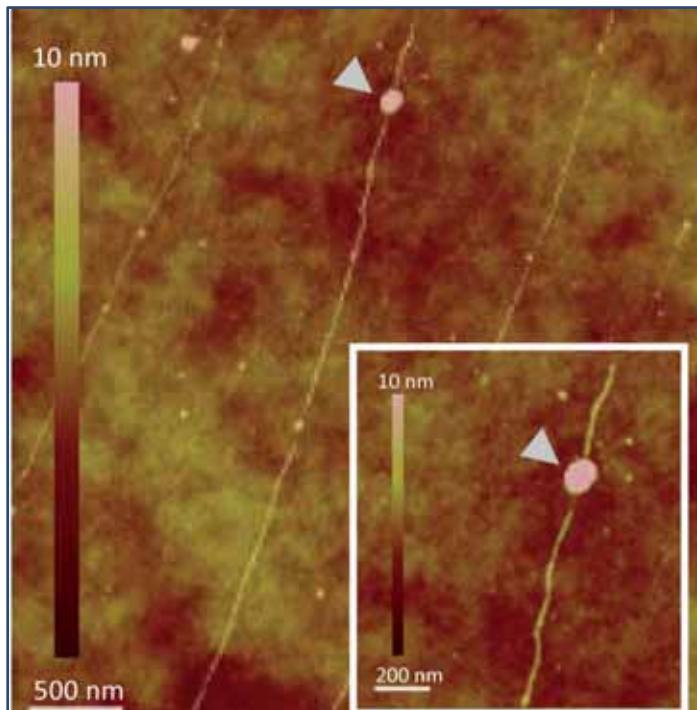
Human Metaphase-Chromosomes





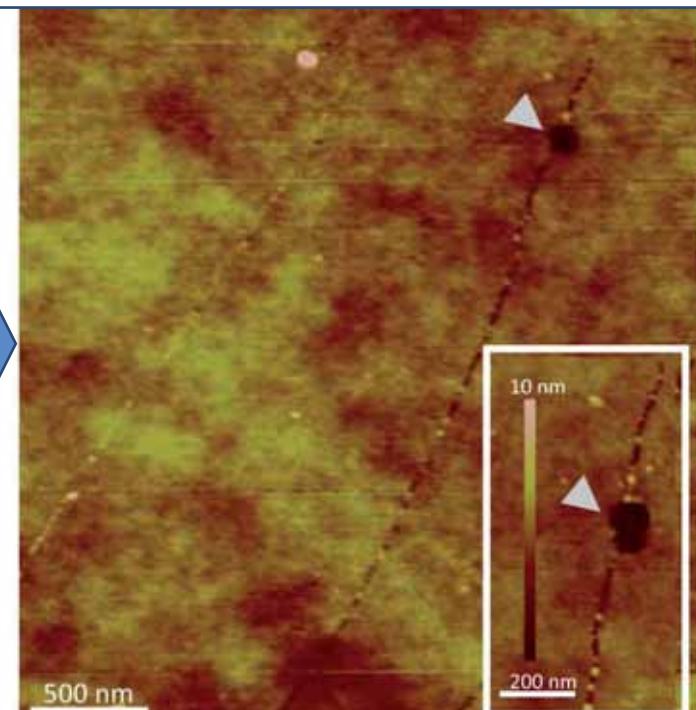


before laser

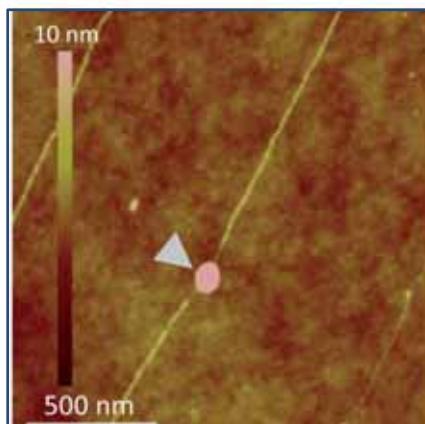


a

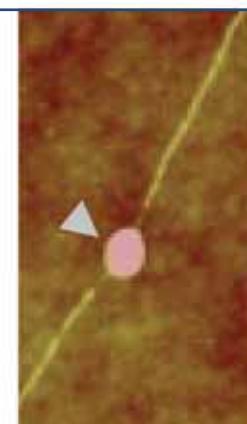
after laser



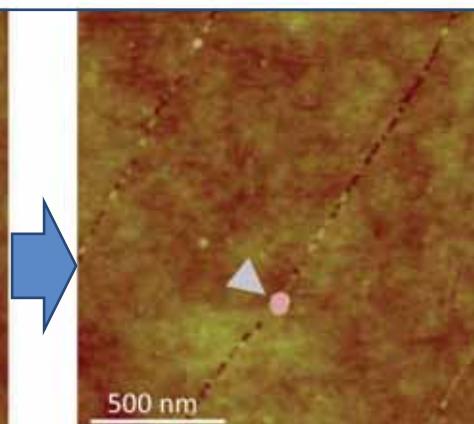
b



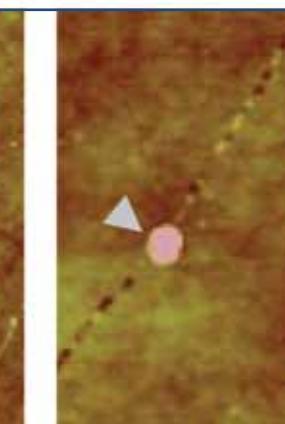
c



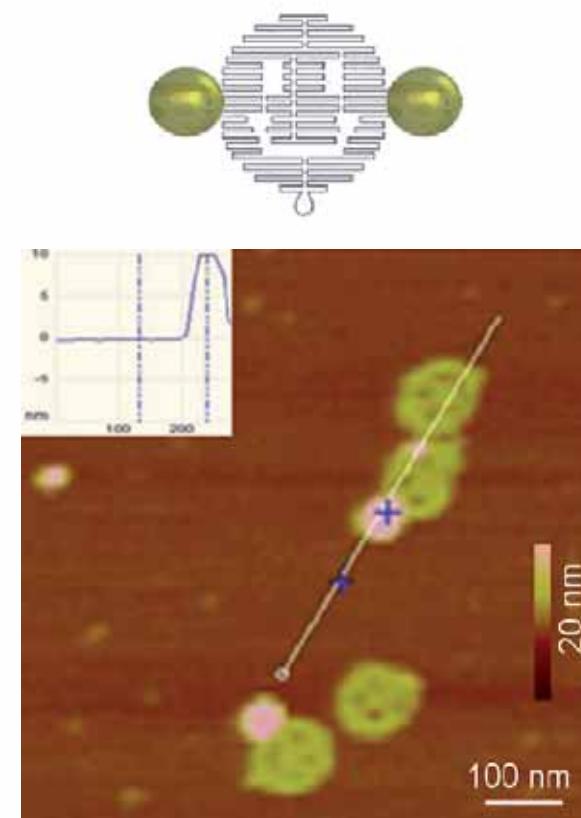
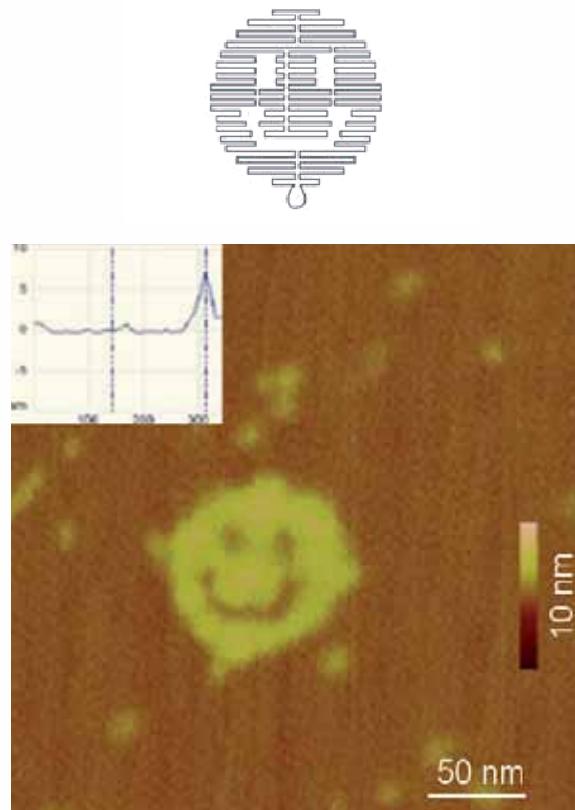
d



d



- “Smiley”-like DNA-origami and sequence-specific labelled origami (12 nm Au nanoparticles) AFM-image on mica



A. Kuzyk, A.-P. Eskelinen, P. Törmä

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G. Brönstrup

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