

Tamm State-Coupled Emission: Effect of Probe Location and Emission Wavelength

Ramachandram Badugu and Joseph R. Lakowicz

Center for Fluorescence Spectroscopy, Department of Biochemistry and Molecular Biology,
University of Maryland Baltimore, 725 West Lombard Street, Baltimore, Maryland 21201,
United States

Contents

Figure S1. Calculated reflectivity for the Tamm structure for different incident wavelengths using KR (A) and RK (B) S-polarized illumination.

Figure S2. Electric field intensities for 580 nm incident light on the Tamm structure. Panels A and C are for KR, and B and D for RK illumination.

Figure S3. (A), Apparent absorption of the 1DPC, which is the structure with no metal layer, using RK illumination. (B), Calculated reflectivity of the Tamm structure using unpolarized RK illumination. The dual peaks are due to the S- and P-polarized resonances.

Figure S4. Angle-dependent emission intensities for Nile Blue on the Tamm structure with KR illumination at 43 degrees (A) and with RK illumination (B). Nile Blue is in the 27 nm PVA film

above the metal layer as shown in the inset. The KR illumination angle is 45 degrees and for RK illumination is at 180 degrees.

Figure S5. Tamm state-coupled emission of Nile Blue with S- (A and B) and P-polarized (C and D) observation. RK, S-polarized 532 nm illumination at 115 degrees is used. Inset shows the probe location below the metal film.

Figure S6. Tamm state-coupled emission of Nile Blue located in the PVA layer above the metal with S- (A and B) and P-polarized (C and D) observation. P-polarized KR 532 nm illumination at 45 degrees is used. Inset shows the probe location above the metal film.

Figure S7. Angle-dependent emission intensity for S101, (A) and RhB (B) below the metal layer using S-polarized RK illumination at 115 degrees. Inset shows the probe location below the Ag film.

Figure S8. P-polarized KR (A) and RK emission spectra (B) of S101. Corresponding RhB emission spectra are shown in panels C and D, respectively, at different observation angles. The dashed blue lines in the top panels show the S101 emission from PVA layer on glass and in bottom panel is the corresponding RhB emission. 532 nm KR, P-polarized light illumination at 43 degrees is used. Inset shows the probe location.

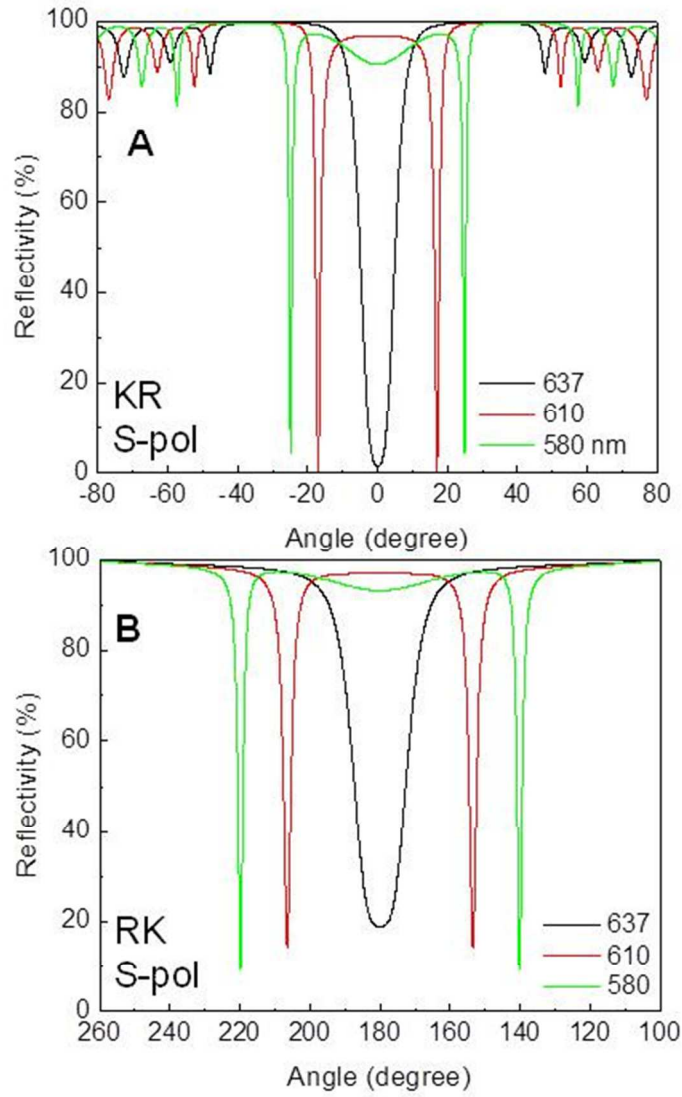


Figure S1. Calculated reflectivity for the Tamm structure for different incident wavelengths using KR (A) and RK (B) S-polarized illumination.

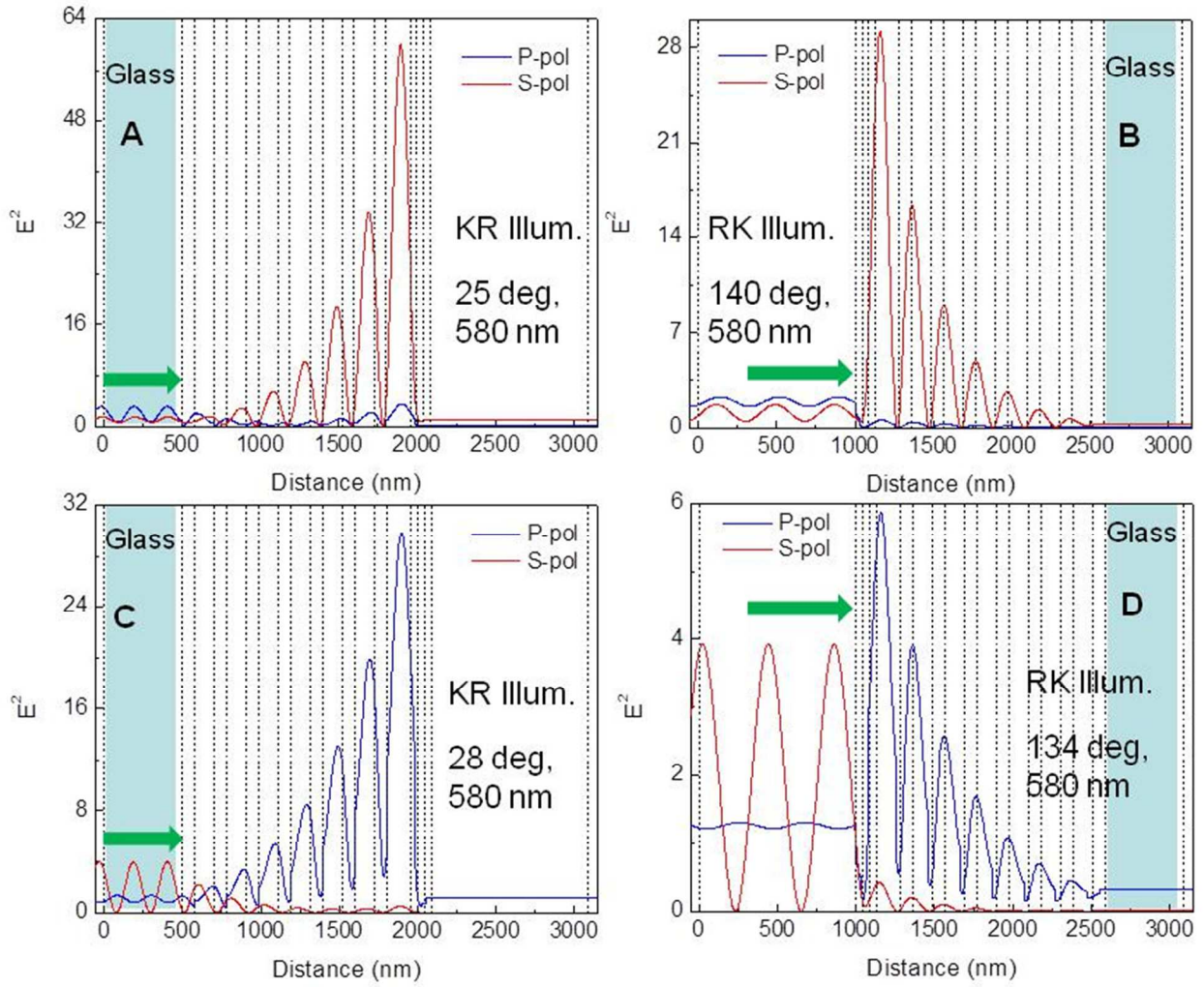


Figure S2. Electric field intensities for 580 nm incident light on the Tamm structure. Panels A and C are for KR, and B and D for RK illumination.

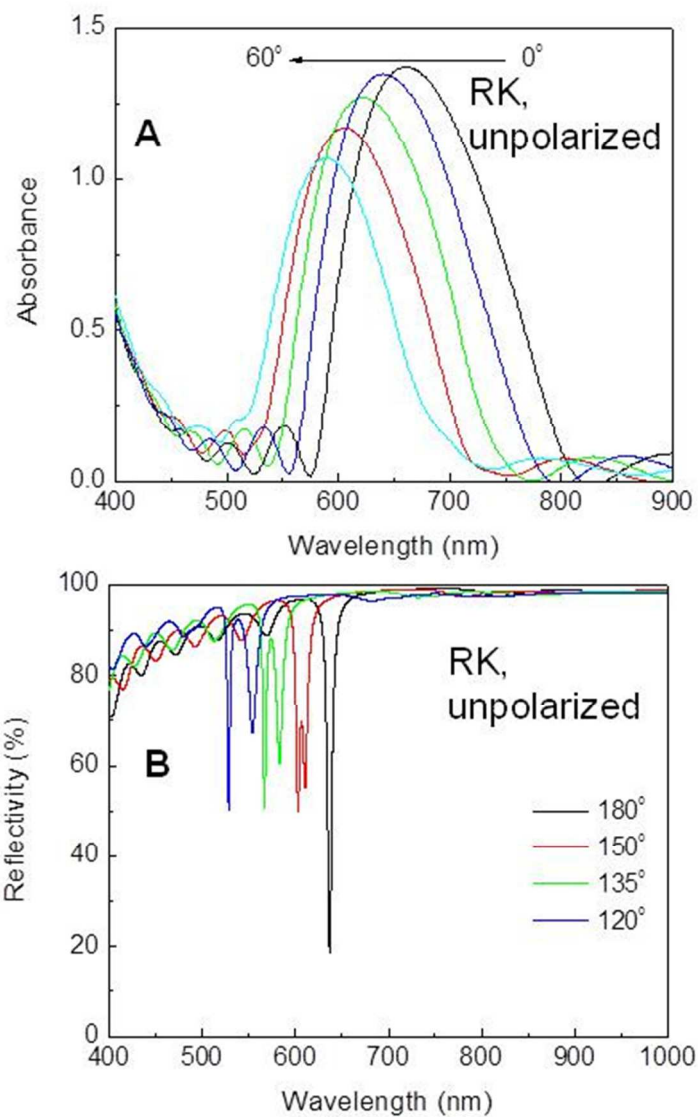


Figure S3. (A), Apparent absorption of the 1DPC, which is the structure with no metal layer, using RK illumination. (B), Calculated reflectivity of the Tamm structure using unpolarized RK illumination. The dual peaks are due to the S- and P-polarized resonances.

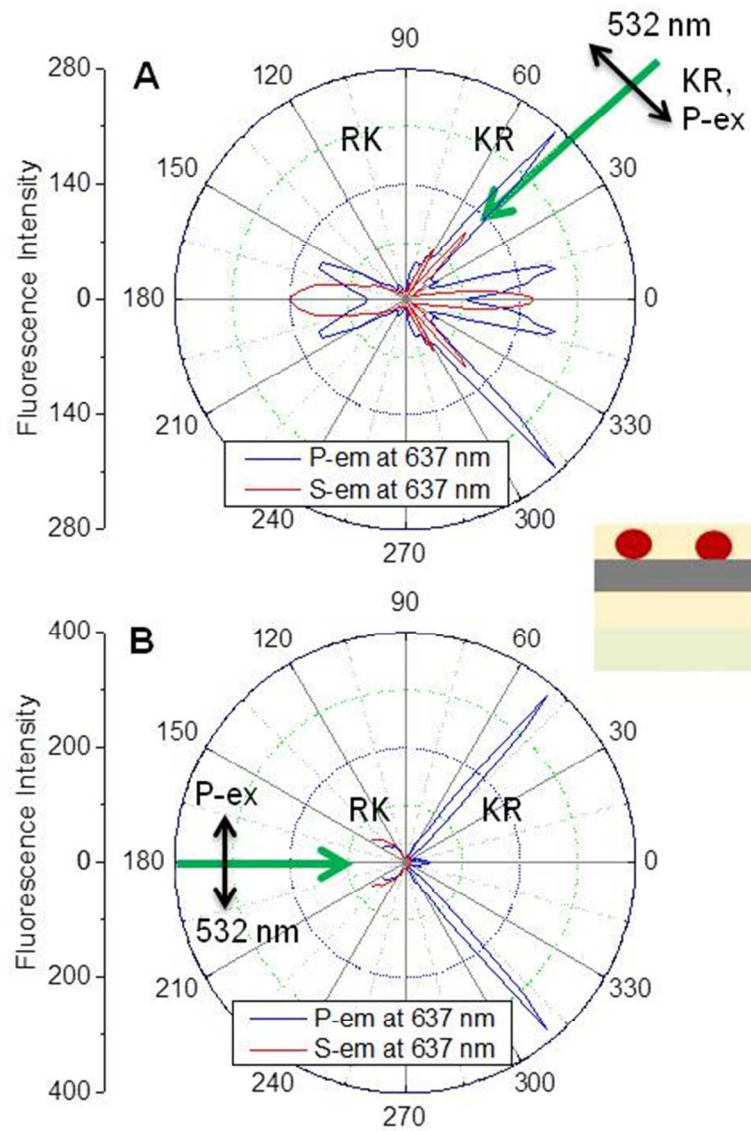


Figure S4. Angle-dependent emission intensities for Nile Blue on the Tamm structure with KR illumination at 43 degrees (A) and with RK illumination (B). Nile Blue is in the 27 nm PVA film above the metal layer as shown in the inset. The KR illumination angle is 45 degrees and for RK illumination is at 180 degrees.

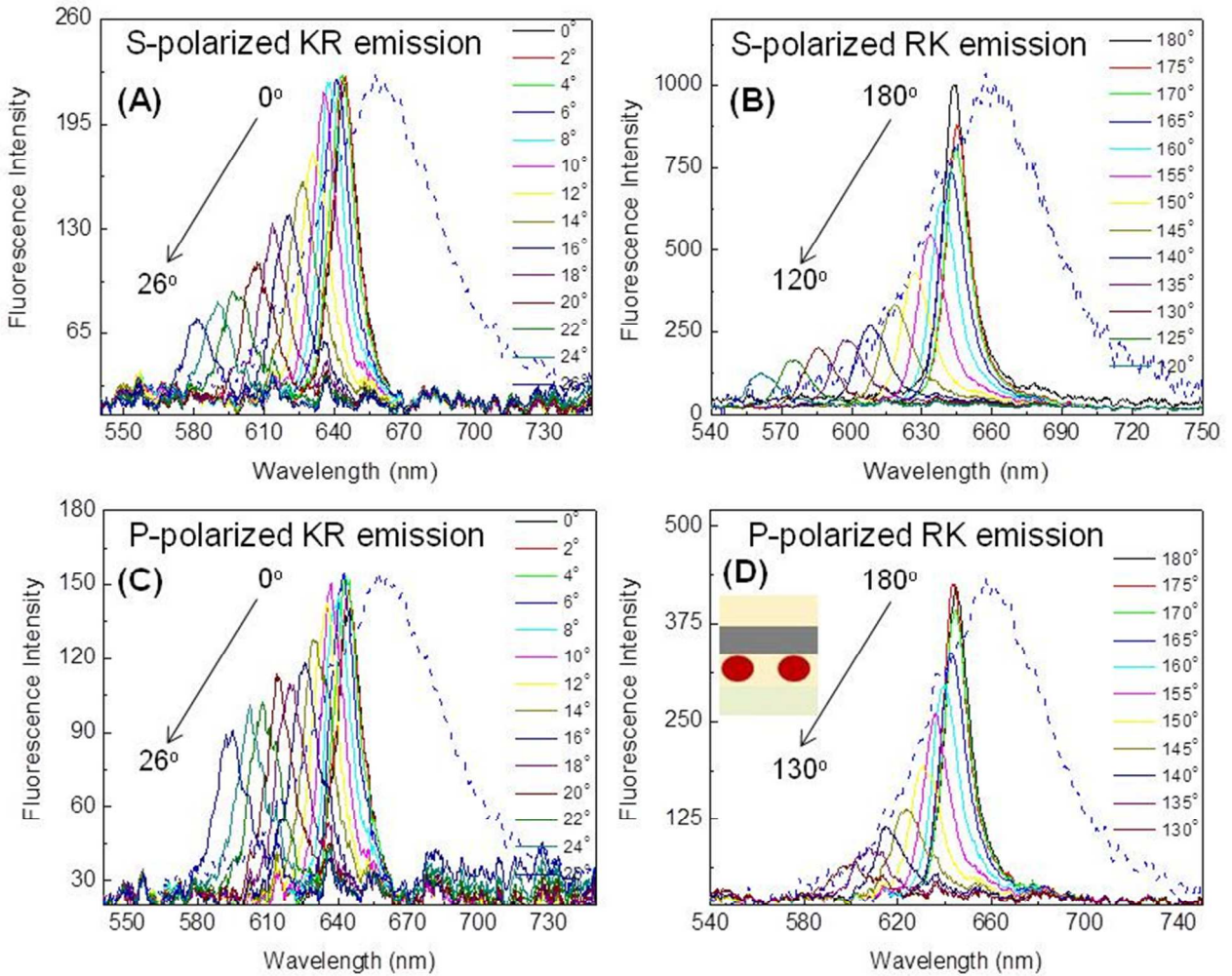


Figure S5. Tamm state-coupled emission of Nile Blue with S- (A and B) and P-polarized (C and D) observation. RK, S-polarized 532 nm illumination at 115 degrees is used. Inset shows the probe location below the metal film.

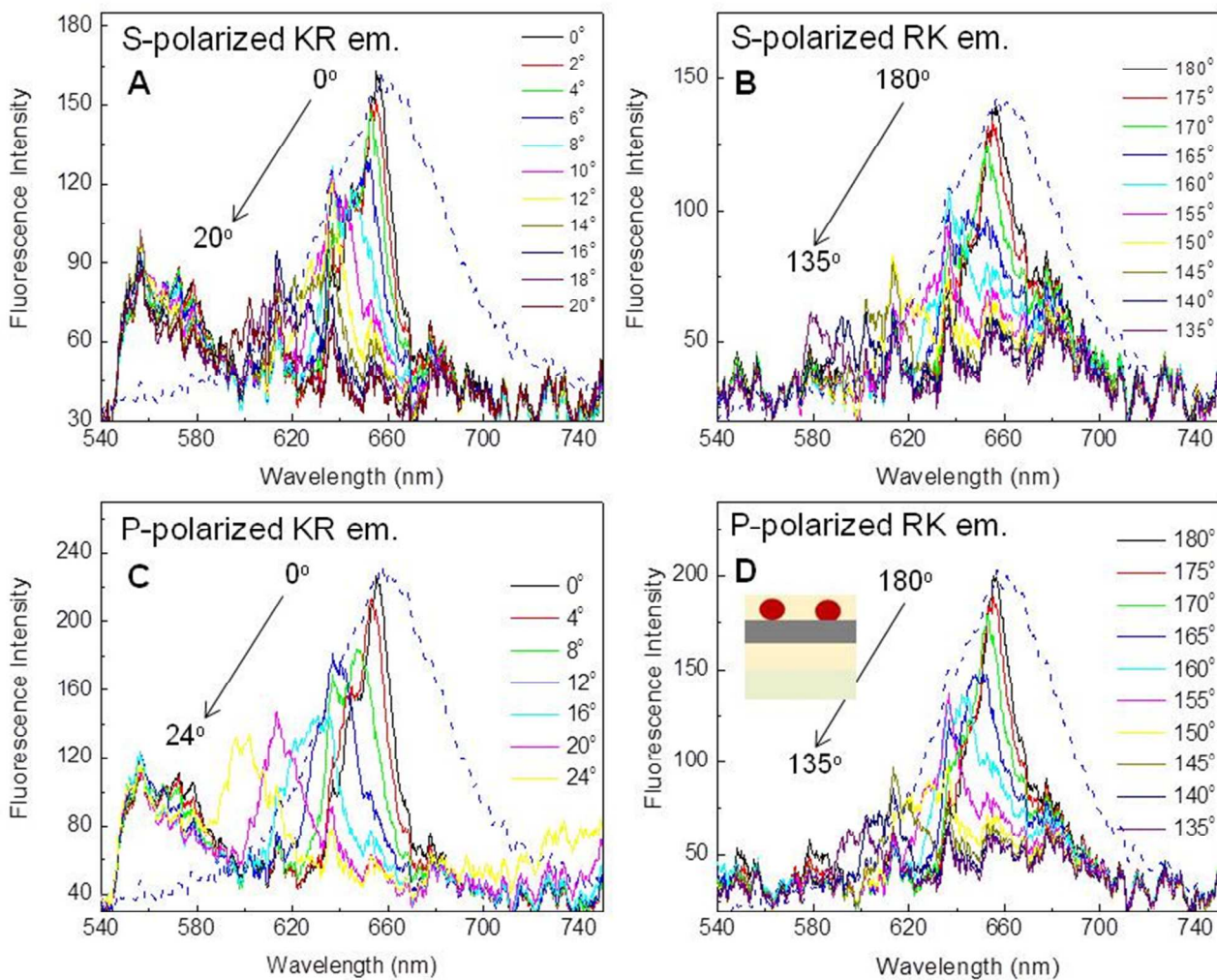


Figure S6. Tamm state-coupled emission of Nile Blue located in the PVA layer above the metal with S- (A and B) and P-polarized (C and D) observation. P-polarized KR 532 nm illumination at 45 degrees is used. Inset shows the probe location above the metal film.

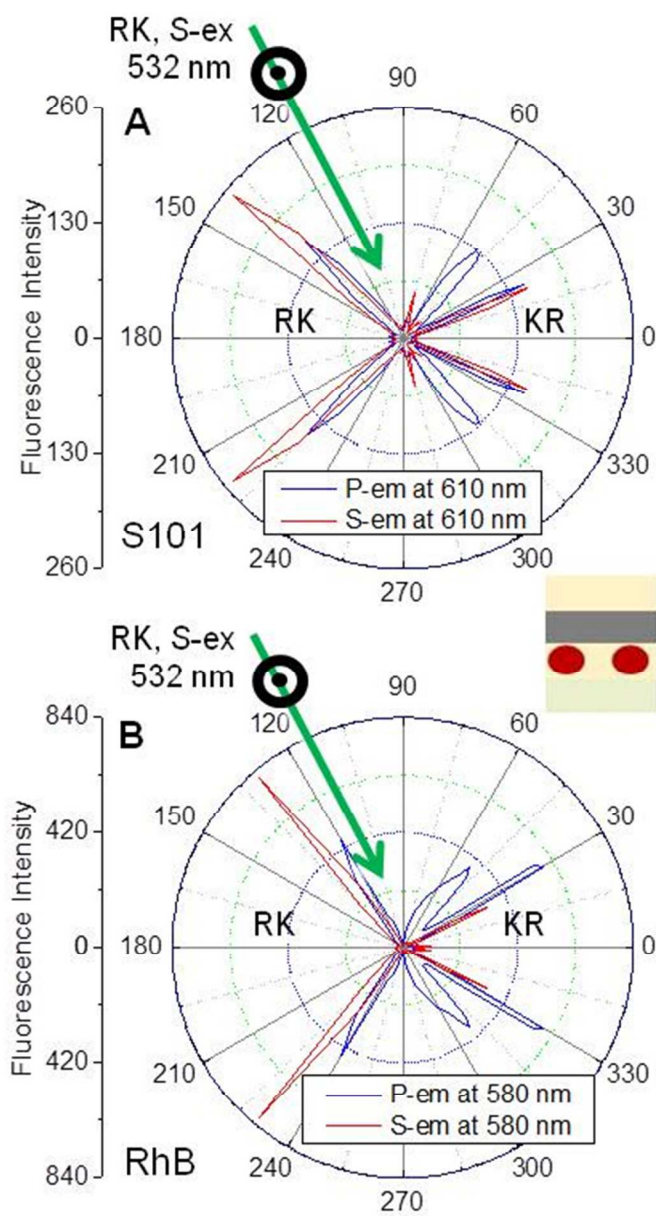


Figure S7. Angle-dependent emission intensity for S101, (A) and RhB (B) below the metal layer using S-polarized RK illumination at 115 degrees. Inset shows the probe location below the Ag film.

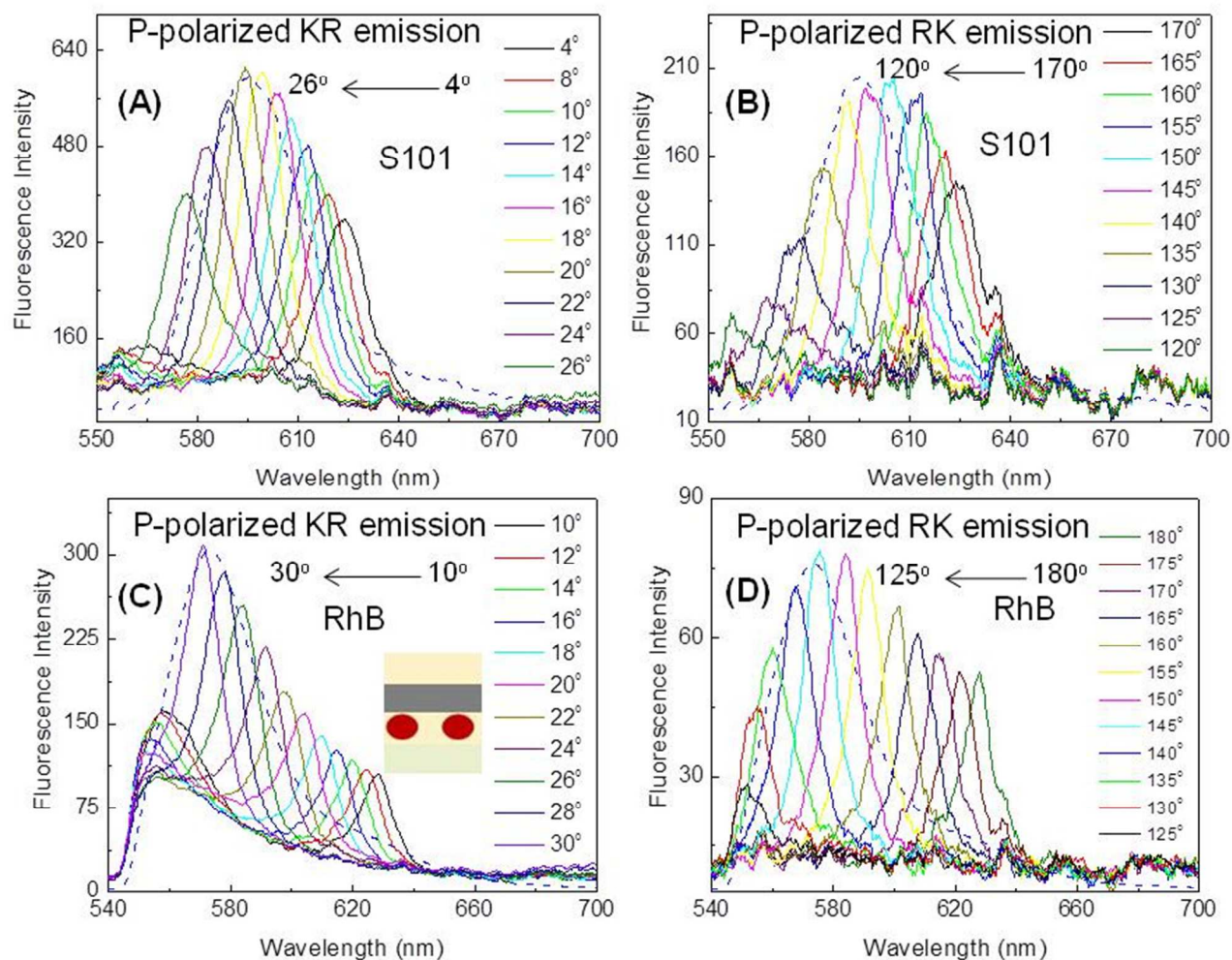


Figure S8. P-polarized KR (A) and RK emission spectra (B) of S101. Corresponding RhB emission spectra are shown in panels C and D, respectively, at different observation angles. The dashed blue lines in the top panels show the S101 emission from PVA layer on glass and in bottom panel is the corresponding RhB emission. 532 nm KR, P-polarized light illumination at 43 degrees is used. Inset shows the probe location.

Complete list of authors of references 45 and 52.

1. Vasa, P., Pomraenke, R., Schweiger, S., Mazur, Y. I., Kunets, V., Srinivasan, P., Johnson, E., Kihm, J. E., Kim, D. S., Runge, E., Salamo, G., and Lienau, C., Coherent Exciton-Surface-Plasmon-Polariton Interaction in Hybrid Metal-Semiconductor Nanostructures, *Phys. Rev. Letts.*, **2008**, *101*, 116801-1/4.
2. Eid, J., Fehr, A., Gray, J., Luong, K., Lyle, J., Otto, G., Peluso, P., Rank, D., Baybayan, P., Bettman, B., Bibillo, A., Bjornson, K., Chaudhuri, B., Christians, F., Cicero, R., Clark, S., Dalal, R., Dewinter, A., Dixon, J., Foquet, M., Gaertner, A., Hardenbol, P., Heiner, C., Hester, K., Holden, D., Kearns, G., Kong, X., Kuse, R., Lacroix, Y., Lin, S., Lundquist, P., Ma, C, Marks, P., Maxham, M., Murphy, D., Park, I., Pham, T., Phillips, M., Roy, J., Sebra, R., Shen, G., Sorenson, J., Tomaney, A., Travers, K., Trulson, M., Veceli, J., Wegener, J., Wu, D., Yang, A., Zaccarin, D., Zhao, P., Zhong, F., Korch, J., Turner, S., Real-Time DNA Sequencing from Single Polymerase Molecules, *Science*, **2009**, *323*, 133-138.