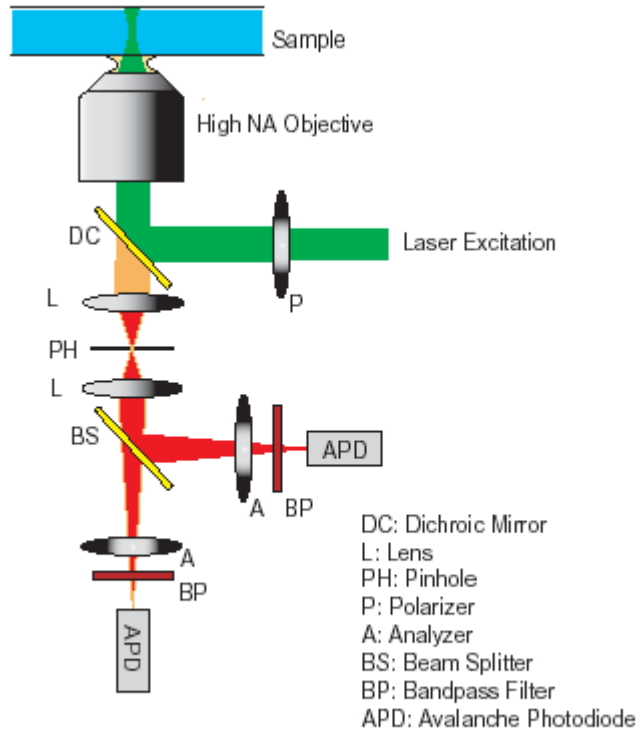


## Supporting Information



**S1:** A diagram of the experimental setup used in pol-FCS experiments. Measured FCS curves with various experimental configurations are expressed in the format  $g^2_{JK}(\tau)$  (the correlation of the detected J-polarized signal with the detected K-polarized signal under excitation polarization I). The excitation polarizations (I) are modified to be circularly polarized or parallel (Y) or perpendicular (X) to the optical top. The selected emission polarizations (J and K) are indiscriminant (nonpolarized, NP), parallel (Y), or perpendicular (X) to the optical top