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## Probing Photon Correlation in Spontaneous Emission of Lanthanide Nanocrystals

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We explore the lifetime and cross-correlation of different sizes  $\text{NaYb}_x\text{Y}_{1-x}\text{F}_4$  ( $x = 20\%$ ,  $50\%$  and  $100\%$ ) nanoparticles. The lifetime reduces when Yb doping concentration increases, The  $g_2(0)$  of  $\text{NaYbYF}_4$  is over 10, but only for nanocrystal size below 40 nm.

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