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**Determine the number of nitrogen vacancy color centers in the nano-diamond particles with large size difference** JUI-HUNG HSU, National Sun Yat-sen University, LONG-JYUN SU, HUAN-CHENG CHANG, Academia Sinica — The number of emitters in a nano-particle is usually determined by the photon correlation using the Hanbury Brown and Twiss configuration. However, limited to the photon statics, this method is only valid for the small numbers. It would be difficult to measure the number of emitters, if individual nano-particles contain more than several tens or hundreds of emitters. In this contribution, we present a work to quantitatively determine the number of nitrogen-vacancy (NV) centers in the individual nano-diamond (ND) particles. Our previous work (Nanotechnology 24, 315702) suggests that the density of NV centers would be significantly decreased while reducing ND particle size from 100 nm to 30 nm. It thus motivates us to measure the number of NV centers of individual ND particles with large size difference. Under saturated the pulse excitation, the emission intensity from individual ND particle is proportional to the number of NV centers and the fluorescence quantum yield, which are able to be determined independently.

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