

Poster Application:

Title: Optomechanical coupling between a nano oscillator and a single quantum emitter

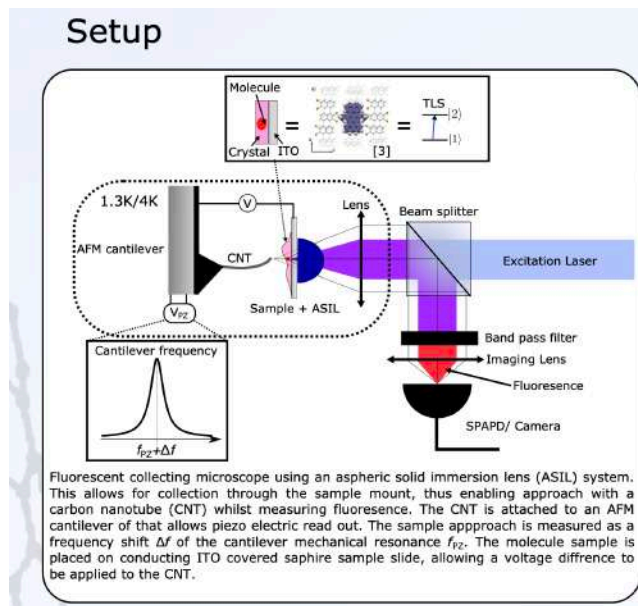
Authors: Mathias J.R. Staunstrup supervised by Brahim Lounis

Labratory: LP2N, Institut Optique.

Abstract

Quantum optomechanics provides promising hybrid platforms for sensing applications and quantum information-and computation. Presented here is the system of an oscillating carbon nanotube(CNT) coupled to a single molecule quantum emitter through the stark effect. This setup predicts direct readout of nanomechanical motion, cooling, oscillator dependent photon statistics and topological actuation of mechanical modes[1][2]. In close correspondence with previously found experimental results [3], we find a zero phonon line width in the 50-70 MHz and GHz range stark shift. Those preliminary results are promising for the development of the proposed optomechanical system

Example of figures



Luminescence spectra

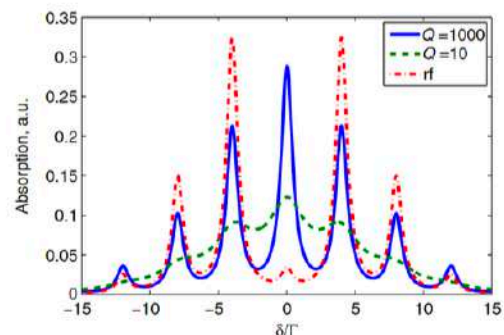


Fig 1: The luminescence spectrum has resonance sidepeaks spaced by $\pm n\omega_m$. Here for different oscillator Q -Factors and compared to periodic Radio frequency signal driving(rf). [1]

[1]: Vadim Puller, Brahim Lounis, & Fabio Pistolesi (2013). Single-Molecule Detection of Nanomechanical Motion. PhysicalReview Letters,110