

Physics and chemistry of nanostructures

Progress Navolchi project

March 12th, 2012

Prof. Zeger Hens
Ghent University
Belgium



Outline

- **People**
- **Materials**
 - PbX/CdX heterostructures
- **Processing**
- **Properties**
 - Absorption enhancement in QD monolayers
 - Intraband absorption with PbX QDs
 - Pump-probe measurements -> amplification
- **Devices**
 - Absorbance of functionalized waveguides
- **Planning of future work**



People

- **Yolanda Justo**
 - Obtained her PhD last December
 - Stopped working for Navolchi as from January 1st
 - Some support will continue
- **Kishu Sagar**
 - New PhD student – should start as from March 1st



Materials

- Nothing new for the moment



Properties

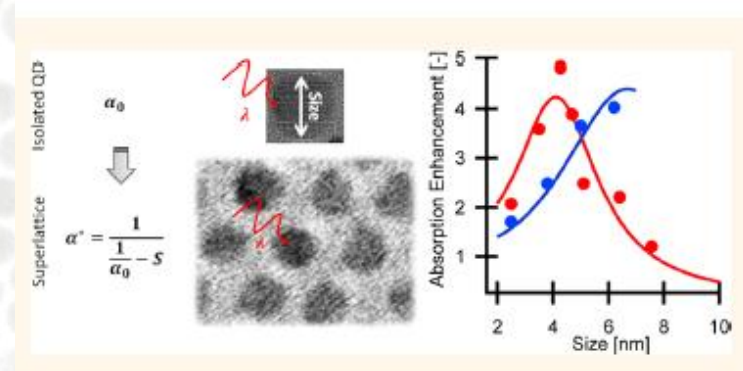
- Absorption Enhancement
 - Paper accepted last week by *ACS Nano*
- Pump-probe measurements
 - This week – screening of all samples sent to Valencia for amplified spontaneous emission

Giant and Broad-Band Absorption Enhancement in Colloidal Quantum Dot Monolayers through Dipolar Coupling

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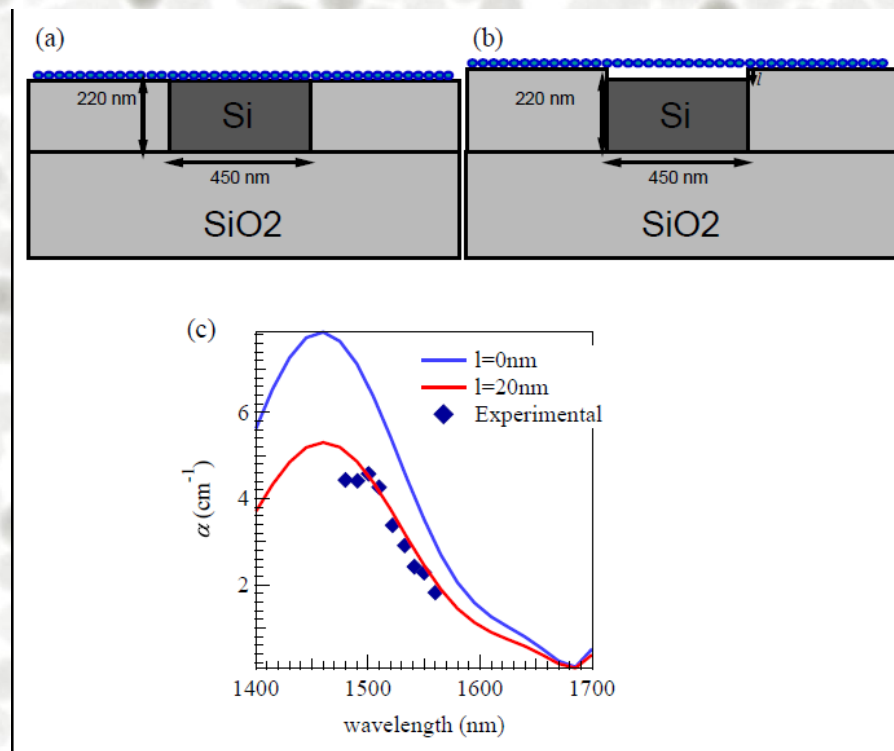
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Devices

- Absorbance in QD functionalized waveguides
- Set of measurements finished, manuscript in preparation



Future work

- **Materials synthesis**
 - Depends on outcome pump-probe measurements
- **Properties**
 - Extend absorption enhancement to multilayers and core/shell particles
 - Continuation of pump-probe studies to understand carrier relaxation and light amplification
- **Devices**
 - Finish absorbance of functionalized waveguides
- **Sample exchange with Valencia**
 - Decision on what samples to sent by the end of this week / early next week

