

*Seminar lecture in the framework of International doctoral school in Science*

Stefano DANESI (PhD Student @ Università degli studi di Brescia)  
*will deliver a lecture entitled:*

## **Using optical resonances to control heat generation and propagation in silicon nanostructures**

*Chairperson:* Ph.D student Andrea TOGNAZZI

### ABSTRACT

Light-matter interactions are responsible for heat generation in materials, which can trigger chemical and physical reactions. In this talk I will discuss the possible reactions that can take place when a silicon nanopillar is heated with a laser radiation. I will show that visible light can be exploited to selectively crystallize internal regions of the nanopillar, which is not possible by conventional thermal treatments. A detailed study on lattice crystallization and reconstruction dynamics reveals that local heating drives the formation of secondary antennas embedded into the pillars, which double the light harvesting capability of the system. This approach can be easily extended to many types of nanostructured materials and interfaces, offering a unique approach for many applications involving optothermal processes.

## Seminario

**Martedì 18 dicembre 2018**

**Aula 2, ore 14.00**

Via dei Musei 41 - Brescia

International Doctoral Program in  
Science@Università Cattolica del Sacro Cuore  
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