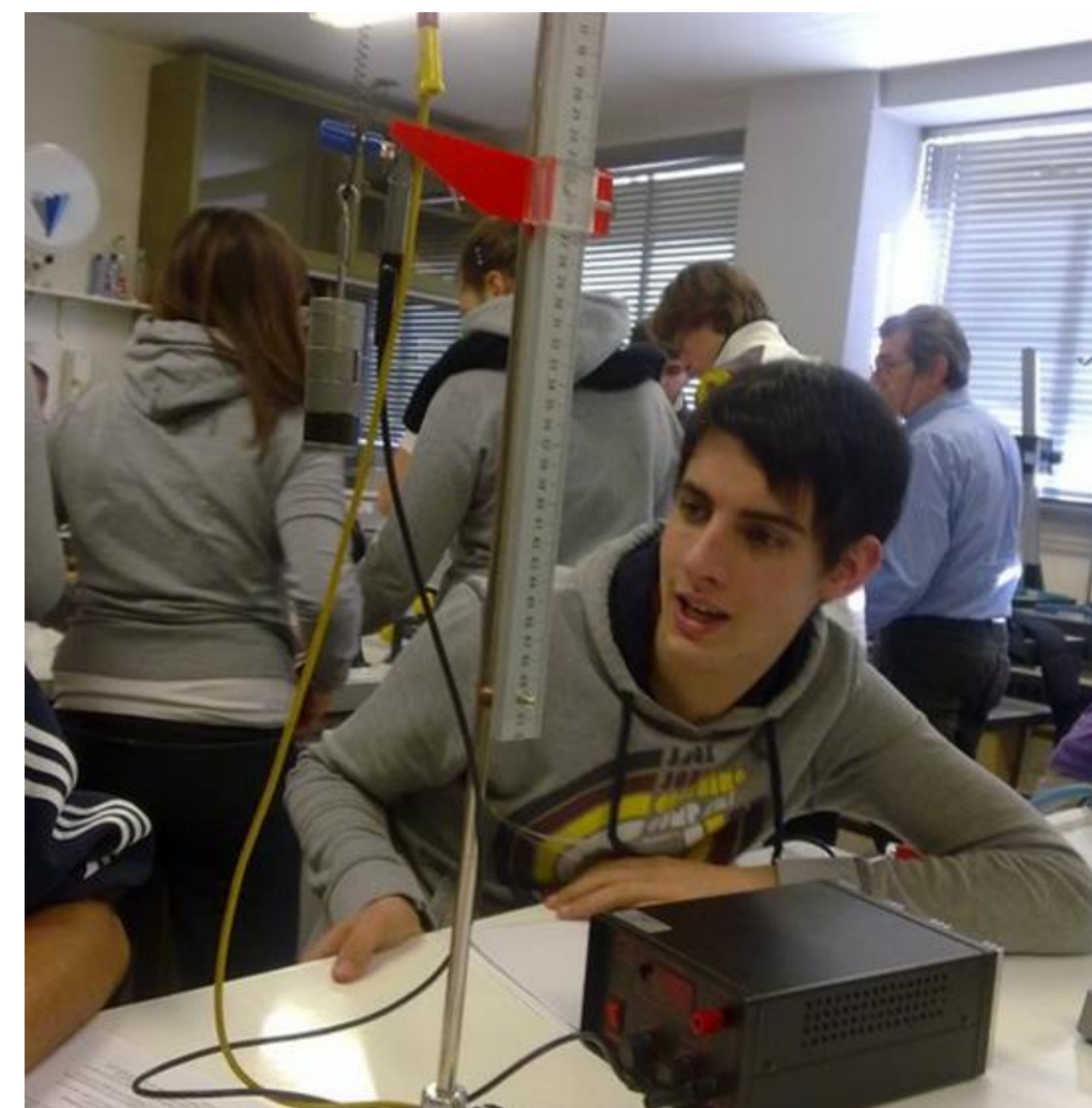


## NANOLAB: High School NanoScience *embedding Nano in high school curricula*



- ★ Lisotti Annamaria
  - 🏠 IIS Cavazzi, Pavullo - IT
  - 🔪 High School Physics Teacher,  
Teachers training
- [lisottiannamaria@gmail.com](mailto:lisottiannamaria@gmail.com)
- [www.nanolab.unimore.it](http://www.nanolab.unimore.it)
  - [@lisottianna](http://www.cavazzisorbelli.it/nanoscienze)

Nano-systems often respond to external fields in different, or even opposite ways with respect to 'classical' materials. This opens the possibility to expose intrinsically quantum phenomena in school laboratories. The unusual properties of nano-systems are probed by simple experiments,

including systematic data collection- in contrast to spectacular but qualitative-only demonstrations. They can be employed since the early stages of scientific education, when treating the simplest phenomenology of matter (electrical conduction, elasticity, friction, etc.)

### Hands-on quantitative Nano Labs

- Simple, cheap, robust and safe experimental protocols run in a standard school lab.
- The real stuff! Use of nanomaterials samples.
- High tech “bring your own device” approach & massive use of new technology tools.

### 4 Big ideas & Thematic areas

- Size matters → *Nanoparticles*
- A new hierarchy in forces → *Nanostructured surfaces & nanotribology*
- Structure and functionalities → *Memory metals*
- The leading role of quantum mechanics → *Conductive polymers*

### Opportunities

- **Free download (IT, EN)**  
Open Educational Resources  
Published under **CC license**  
supporting materials for teachers, videoguides & student sheets +kit
- **Jobshadowing** opportunities for teachers & **Teachers training**
- Call for **partner schools** in science projects (14-18)