

## Ph.D. Course in Materials Science and Nanotechnology

University of Milano-Bicocca, Department of Materials Science, via Cozzi 55, 20125 Milano

**February 4, 2019 – 2.30 p.m.**

**Seminar room - Department of Materials Science U5**

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## Ferroelectric perovskites for giant refraction

In principle, materials with a broadband giant index of refraction overcome chromatic aberration and shrink the diffraction limit down to the nanoscale, allowing new opportunities for nanoscopic imaging. They also open alternative avenues for the management of light to improve the performance of photovoltaic cells. Recent advances have demonstrated the feasibility of a giant refractive index in metamaterials at microwave and terahertz frequencies, but the highest reported broadband index of refraction in the visible is  $n < 5$ . We report a ferroelectric perovskite with an index of refraction of  $n > 26$  across the entire visible spectrum and demonstrate its behaviour using white-light and laser refraction and diffraction experiments. The sample, a solid-solution KTN:Li perovskite, has a naturally occurring room-temperature phase that propagates visible light along its normal axis without significant diffraction or chromatic dispersion, irrespective of beam size, intensity and angle of incidence.

PhD students and all interested in the seminar are kindly invited to participate.

The PhD Coordinator  
Prof. Marco Bernasconi