

damiano nardi

Ph.D.

contact

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KMgroup

objective

To work full-time in a leading high-tech / nanomanufacturing / inspection company starting in Spring 2014, utilizing expertise in nanometrology, microscopy, EUV, lasers, optics, lithography and modeling, with a great team and products.

education

- Jan. 2010 **Doctor of Philosophy** Applied Physics Università degli Studi, Milan, Italy
Thermomechanics of hypersonic phononic crystals
- July 2006 **Master of Science** Condensed Matter Physics Università Cattolica, Brescia, Italy
Time-resolved optical spectroscopy of strongly correlated systems
- Dec. 2003 **Bachelor of Science** Physics Università Cattolica, Brescia, Italy
Specialization in CS for telecommunications

experience

- 2011 - Now **Kapteyn-Murnane Group** JILA - University of Colorado, Boulder
Sr. Research Associate
In charge of development of Acoustic Nanometrology using tabletop coherent EUV light for characterizing the mechanical and thermal properties of ultrathin films and nanostructures at sub-10nm length scales, significantly enhancing current capabilities.
- Detailed achievements:*
- Envisioned and currently developing, with a team of 5, EUV Acoustic Nanometrology for superior nano-characterization
 - Authored and won first Semiconductor Research Corporation grant for the KM Group, focused on EUV Nanometrology development for applications in nanolithography and nanomanufacturing sciences
 - Collaborating with 3 leading semiconductor manufacturers to transfer EUV Nanometrology from lab to industry
 - Specialized in tabletop coherent EUV light sources based on high-order harmonic generation (HHG)
 - 5+ years of experience on advanced amplified femtosecond laser systems
 - Conceived, built and optimized multiple optics systems for nanometrology
 - Characterized the elastic properties of low-k dielectric sub-50nm thin films
 - Investigated non-diffusive heat transport in nanostructured systems
 - Developed finite elements multiphysics modeling of the thermo-elastic properties of nanostructured thin films and semiconductor systems
 - Knowledge of AFM, SEM and e-beam lithography.
- 2010 **Department of Physics** Università Cattolica, Brescia, Italy
Researcher
Implemented photoacoustics and time-resolved all-optical techniques for elasticity and heat transport nano-characterization in hypersonic phononic crystals, metal/silicon and metal/dielectric systems.
- 2000 - 2006 Intern experiences on digital data acquisition and database management. Italy

computer skills

Languages and Software Comsol, MATLAB, Igor Pro, LabVIEW, L^AT_EX, MS Office
Operating Systems Mac OS X, Windows, Linux

personal skills

Team player good at communicating constructively, negotiating and reaching agreements in group research and collaborations with industry. Currently mentoring 2 graduate students.

Experienced in dynamic, multicultural working environments and in stress situations to fulfill defined deadlines.

Quick learner and detail oriented with excellent problem solving/debugging ability. Spear-headed the full lifecycle of multiple projects.

Precise, reliable and highly motivated, with 7+ years of lab hands-on experience. "Can do" attitude with the desire to work with a great team and products.

interests

Played basketball for 12 years at competitive levels in Italy. Love for music and technology. Willing to travel and experience different cultures.

communication skills

20+ oral and poster contributions to international conferences, workshops and summer schools.

Best in Session Award winner at 2103 SRC TECHCON conference - Nanometrology session.

publications

Probing limits of acoustic nanometrology using coherent extreme ultraviolet light, Proc. of SPIE Metrology, Inspection and Process Control for Microlithography **8681** (2013).

Generation and control of ultrashort-wavelength 2D surface acoustic waves at nanoscale interfaces, Phys. Rev. B **85**, 195431 (2012).

Design of a surface acoustic wave mass sensor in the 100 GHz range, Appl. Phys. Lett. **100**, 253106 (2012).

Characterization of ultrathin films by laser-induced sub-picosecond photoacoustics with coherent extreme ultraviolet detection, Proc. of SPIE Metrology, Inspection and Process Control for Microlithography **8324** (2012).

Temperature dependence of the thermal boundary resistivity of glass-embedded metal nanoparticles, Appl. Phys. Lett. **100**, 011902 (2012).

Optical and mechanical investigations of nanostructures for biomolecular detection, Recent Advances in Nanoscience and Nanotech. **2**, Ch. 12, Apple Academic Press (2011).

Probing thermomechanics at the nanoscale: impulsively excited pseudosurface acoustic waves in hypersonic phononic crystals, Nano Lett. **11**, 4126 (2011).

Ab initio thermodynamics calculation of all-optical time-resolved calorimetry of nanosize systems: Evidence of nanosecond decoupling of electron and phonon temperatures, Phys. Rev. B **81**, 155426 (2010).

Disentangling thermal and nonthermal excited states in a charge-transfer insulator by time- and frequency-resolved pump-probe spectroscopy, Phys. Rev. B **80**, 235129 (2009).

Pseudosurface acoustic waves in hypersonic surface phononic crystals, Phys. Rev. B **80**, 104119 (2009).

Ultrafast laser pulses to detect and generate fast thermomechanical transients in matter, IEEE Photonics Journ. **1**, 20 (2009).