

work

asylum research - an oxford instruments company.
july 2012 - onwards.
research and development in atomic force microscopy

education

graduate studies. (2005-2012) <i>mcgill university, montreal, canada.</i>	phd in physics. <i>gpa: 4.00/4.00</i>
bachelor's degree of science. (2002-2005) <i>mcgill university, montreal, canada.</i>	major in physics. minor in statistics. <i>gpa: 3.94/4.00</i>
diplôme d'études collégiales. (2001-2002) <i>marianopolis college, montreal, canada.</i>	pure and applied sciences. <i>overall average: 91%</i>

research experience

kyoto university, kyoto, japan. (dr. hirofumi yamada)
first half of 2010.
doctoral studies research project studying the effects of piezoacoustic excitation on the recovery of conservative and dissipative forces in frequency modulation atomic force microscopy.

jagellonian university, krakow, poland. (dr. marek szymonski)
summer of 2005.
full-time summer intern working on a study of immunological cells by using atomic force microscopy in a liquid environment.

mcgill university, montreal. (dr. david hanna)
summer of 2004.
full-time summer intern working on independent research project made possible by an undergraduate research award (USRA).

notre-dame hospital research center, montreal. (dr. massimo pandolfo)
summers of 2001 and 2002.
full-time summer intern DNA sequencing and genotyping using fluorescent and radioactive labelling for a disease-mapping project.

sainte-justine hospital research center, montreal. (dr. damian labuda)
summer of 1998.
full-time summer intern programming database applications for storage and analysis laboratory results and graphics designing for research publications.

scholarships

awards

FQRNT bourse pour stage international (Japan)	NSERC innovation challenge award (2012)
FQRNT bourse d'études de cycles supérieurs	fessenden science innovation prize (2011)
NSERC canadian graduate scholarship	fessenden science innovation prize (2010)
<i>doctoral 3 year (CGS)</i>	NSERC undergraduate research award (2005)
NSERC canadian graduate scholarship	NSERC undergraduate research award (2004)
<i>master's 1 year (CGS)</i>	(+ <i>meteorological service of canada supplement</i>)
james mcgill entrance scholarship	T.I. gurman prize in physics

primary publications

A. Labuda, C. Cao, T. Walsh, J. Meinhold, R. Proksch, Y. Sun, and T. Filleter
"Static and dynamic calibration of torsional spring constants of cantilevers"
Rev. Sci. Instrum. **89**, 093701 (2018)

A. Labuda, M. Kocun, M. Lysy, T. Walsh, J. Meinhold, T. Proksch, W. Meinhold and R. Proksch
"Calibration of higher eigenmodes of cantilevers"
Rev. Sci. Instrum. **87**, 073705 (2016)

A. Labuda, M. Kocun, W. Meinhold, D. Walters and R. Proksch
"Generalized Hertz model for bimodal nanomechanical mapping"
Beilstein J. Nanotechnol. **7**, 970–982 (2016)

A. Labuda
"Daniell method for power spectral density estimation in atomic force microscopy"
Rev. Sci. Instrum. **87**, 033704 (2016)

A. Labuda, R. Proksch
"Quantitative measurements of electromechanical response with a combined optical beam and interferometric atomic force microscope"
Appl. Phys. Lett. **106**, 253103 (2015)

A. Labuda, K. Kobayashi, K. Suzuki, H. Yamada, and P. Grütter
"Monotonic damping in nanoscopic hydration experiments"
Phys. Rev. Lett. **110**, 066102 (2013)

A. Labuda, M. Lysy, P. Grütter
"Stochastic simulation of tip-sample interactions in atomic force microscopy"
Appl. Phys. Lett. **101**, 113105 (2012)

A. Labuda, M. Lysy, W. Paul, Y. Miyahara, P. Grütter, R. Bennewitz, M. Sutton
"Stochastic noise in atomic force microscopy"
Phys. Rev. E **86**, 031104 (2012)

A. Labuda, K. Kobayashi, Y. Miyahara, P. Grütter
"Retrofitting an AFM with photothermal excitation for a clean cantilever response in low Q environments"
Rev. Sci. Instrum. **83**, 053702 (2012)

A. Labuda, P. Grütter
"Atomic force microscopy in viscous ionic liquids"
Langmuir **28**, 4319 (2012)

A. Labuda, J. Bates, P. H. Grütter
"The noise of coated cantilevers"
Nanotechnology **23**, 025503 (2012)

A. Labuda, Y. Miyahara, L. Cockins, P. H. Grütter
"Decoupling conservative and dissipative forces in frequency-modulation atomic force microscopy"
Phys. Rev. B **84**, 125433 (2011)

A. Labuda, K. Kobayashi, D. Kiracofe, K. Suzuki, P. H. Grütter, H. Yamada
"Comparison of photothermal and piezoacoustic excitation methods for frequency and phase modulation atomic force microscopy in liquid environments"
AIP Advances **1**, 022136 (2011)

A. Labuda, F. Hausen, N. N. Gosvami, P. H. Grütter, R. B. Lennox, R. Bennewitz
"Switching atomic friction by electrochemical oxidation"
Langmuir **27**, 2561 (2011)

A. Labuda, P. H. Grütter
"Exploiting cantilever curvature for noise reduction in atomic force microscopy"
Rev. Sci. Instrum. **82**, 013704 (2011)

A. Labuda, T. Brastaviceanu, I. Pavlov, W. Paul, D. E. Rassier
"Optical deflection system for probing cantilever deflections parallel to a sample surface"
Rev. Sci. Instrum. **82**, 013701 (2011)

A. Labuda, W. Paul, B. Pietrobon, R. Bruce Lennox, P. Grütter, R. Bennewitz
"High-resolution friction force microscopy under electrochemical control"
Rev. Sci. Instrum. **81**, 083701 (2010)

collaborations

M. Kocun, A. Labuda, W. Meinhold, I. Revenko, and R. Proksch
"Fast, high resolution, and wide modulus range nanomechanical mapping with bimodal tapping mode"
ACS Nano. **11**, 10097 (2017)

R. Proksch, M. Kocun, D. Hurley, M. Viani, A. Labuda, W. Meinhold, and J. Bemis
"Practical loss tangent imaging with amplitude-modulated atomic force microscopy"
Rev. Sci. Instrum. **119**, 134901 (2015)

M. Kocun, A. Labuda, A. Gannepalli, and R. Proksch
"Contact resonance atomic force microscopy imaging in air and water using photothermal excitation"
Rev. Sci. Instrum. **86**, 083706 (2015)

K. Suzuki, K. Kobayashi, A. Labuda, K. Matsushige and H. Yamada
"Accurate formula for dissipative interaction in frequency modulation atomic force microscopy"
Appl. Phys. Lett. **105**, 233105 (2014)

J. O. Kuter-Arnebeck, A. Labuda, S. Joshi, K. Das, and S. Vengallatoree
"Estimating damping in microresonators by measuring thermomechanical noise using laser doppler vibrometry"
Journal of Microelectromechanical Systems **23**, 592 (2014)

J. M. Black, D. Walters, A. Labuda, G. Feng, P. C. Hillesheim, S. Dai, P. T. Cummings, S. V. Kalinin, R. Proksch, and N. Balke
"Bias-dependent molecular-level structure of electrical double layer in ionic liquid on graphite"
Nano Lett. **13**, 5954 (2013)

D. Kiracofe, K. Kobayashi, A. Labuda, A. Raman, H. Yamada
"High efficiency laser photothermal excitation of microcantilever vibrations in air and liquids"
Rev. Sci. Instrum. **82**, 013702 (2011)

J. Y. Suk, C. J. Thompson, A. Labuda, A. L. Goertzen
"Improvement of the MicroPET R4 scanner by wobbling the bed"
Medical Physics **35**, 1223 (2008)

M. Targosz, A. Labuda, P. Czuba, R. Biedroń, M. Strus, A. Gamian, J. Marcinkiewicz, M. Szymoński
"Influence of macrophage activation on their capacity to bind bacterial antigens studied with afm"
Nanomedicine **2**, 82–88 (2006)

patents

A. Labuda, J. Cleveland, D. Walters, R. Proksch
"Metrological scanning probe microscope"
U.S. Patent No. **US 14/931,625** (2016)

R. Proksch, J. Bemis, A. Labuda
"AM/FM measurements using multiple frequency of atomic force microscopy"
U.S. Patent No. **US 14/694,980** (2016)

A. Labuda, P. Grütter, Y. Miyahara, W. Paul, A. Roy-Gobeil
"Method and systems for optimizing frequency modulation atomic force microscopy"
U.S. Patent No. **US 14/384,791** (2015)

A. Labuda, J. Cleveland, D. Walters, R. Proksch
"Optical beam positioning unit for atomic force microscope"
U.S. Patent No. **US 13/999,614** (2014)

D. Rassier, A. Labuda
"Method and apparatus for measuring cantilever deflection in constrained spaces"
U.S. Patent No. **US 13/097,197** (2014)

D. Rassier, A. Kalganov, A. Labuda
"Method and system for optical microscopy"
U.S. Patent No. **US 13/632,221** (2014)