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Department of Photonics Engineering - Senior Researcher
Ultrafast Infrared and Terahertz Science

Research outputs:

Deep-UV to Mid-IR Supercontinuum Generation driven by Mid-IR Ultrashort Pulses in a Gas-filled Hollow-core Fiber
Research output: Contribution to journal › Journal article – Annual report year: 2019 › Research › peer-review

Wavelength scaling of terahertz pulse energies delivered by two-color air plasmas
Research output: Contribution to journal › Journal article – Annual report year: 2019 › Research › peer-review

Terahertz time-domain spectroscopy of zone-folded acoustic phonons in 4H and 6H silicon carbide
Research output: Contribution to journal › Journal article – Annual report year: 2019 › Research › peer-review

Resonant effects in terahertz generation with laser-induced gas plasmas
Research output: Contribution to journal › Conference article – Annual report year: 2018 › Research › peer-review

High-efficiency Sub-single-cycle THz Wave Generation by Three-color Air Plasma
Research output: Chapter in Book/Report/Conference proceeding › Book chapter – Annual report year: 2018 › Research › peer-review

Plasmonic Resonances Affecting Terahertz Generation in Laser-Induced Gas-Plasmas
Research output: Chapter in Book/Report/Conference proceeding › Book chapter – Annual report year: 2018 › Research › peer-review

Terahertz emission from laser-driven gas plasmas: A plasmonic point of view
Research output: Contribution to journal › Journal article – Annual report year: 2018 › Research › peer-review

Ultra-broadband THz spectroscopy for sensing and identification for security applications
Research output: Chapter in Book/Report/Conference proceeding › Book chapter – Annual report year: 2018 › Research › peer-review

Bridging the gap between the THz and IR frequency regime
Influence of dispersion of nonlinearity on coherent supercontinuum generation bandwidth in photonic crystal fibers pumped at 2 μm
Research output: Chapter in Book/Report/Conference proceeding › Conference abstract in proceedings – Annual report year: 2017 › Research › peer-review

Octave-spanning supercontinuum generation in a silicon-rich nitride waveguide: Erratum
Research output: Contribution to journal › Comment/debate – Annual report year: 2017 › Research › peer-review

Parametrically tunable soliton-induced resonant radiation by three-wave mixing
Research output: Contribution to journal › Journal article – Annual report year: 2017 › Research › peer-review

Tunable soliton-induced resonant radiation by three-wave mixing
Research output: Chapter in Book/Report/Conference proceeding › Conference abstract in proceedings – Annual report year: 2017 › Research › peer-review

Ultra-broadband THz time-domain spectroscopy of energetic materials
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2017 › Research › peer-review

Ultrafast nonlinear response of silicon carbide to intense THz fields
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2017 › Research › peer-review

Coherent supercontinuum bandwidth limitations under femtosecond pumping at 2 μm in all-solid soft glass photonic crystal fibers
Research output: Contribution to journal › Journal article – Annual report year: 2016 › Research › peer-review

Multiple-octave spanning high-energy mid-IR supercontinuum generation in bulk quadratic nonlinear crystals
Research output: Contribution to journal › Journal article – Annual report year: 2016 › Research › peer-review

Multiple-μJ mid-IR supercontinuum generation in quadratic nonlinear crystals
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2016 › Research › peer-review
Octave-spanning supercontinuum generation in a silicon-rich nitride waveguide
Research output: Contribution to journal › Journal article – Annual report year: 2016 › Research › peer-review

Widely tunable mid-IR femtosecond resonant radiation induced by self-defocusing solitons in a quadratic nonlinear medium
Research output: Contribution to journal › Journal article – Annual report year: 2016 › Research › peer-review

Collision between soliton and dispersive wave in phase-mismatched quadratic nonlinear crystals
Research output: Contribution to journal › Journal article – Annual report year: 2015 › Research › peer-review

Efficient supercontinuum generation in quadratic nonlinear waveguides without quasi-phase-matching
Research output: Article in proceedings – Annual report year: 2015 › Research › peer-review

Energetic mid-IR femtosecond pulse generation by self-defocusing soliton-induced dispersive waves in a bulk quadratic nonlinear crystal
Research output: Contribution to journal › Journal article – Annual report year: 2015 › Research › peer-review

Experimental observation of dispersive wave generation by self-defocusing nonlinearity in BBO crystal
Research output: Contribution to journal › Journal article – Annual report year: 2015 › Research › peer-review

High-energy compression of mid-IR pulses in a bulk nonlinear crystal
Research output: Contribution to journal › Journal article – Annual report year: 2015 › Research › peer-review

Mid-infrared supercontinuum generation spanning more than 11 μm in a chalcogenide step-index fiber
Research output: Contribution to journal › Journal article – Annual report year: 2015 › Research › peer-review
Mid-infrared supercontinuum covering the 1.4–13.3 μm molecular fingerprint region using ultra-high NA chalcogenide step-index fibre
Research output: Contribution to journal › Letter – Annual report year: 2014 › Research › peer-review

Observation of an octave-spanning supercontinuum in the mid-infrared using ultrafast cascaded nonlinearities
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2014 › Research › peer-review

Octave-Spanning Mid-IR Supercontinuum Generation with Ultrafast Cascaded Nonlinearities
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2014 › Research › peer-review

Soliton-induced nonlocal resonances observed through high-intensity tunable spectrally compressed second-harmonic peaks
Research output: Contribution to journal › Journal article – Annual report year: 2014 › Research › peer-review

Nonlinear wave equation in frequency domain: accurate modeling of ultrafast interaction in anisotropic nonlinear media
Research output: Contribution to journal › Journal article – Annual report year: 2013 › Research › peer-review

Completely background free broadband coherent anti-Stokes Raman scattering spectroscopy
Research output: Chapter in Book/Report/Conference proceeding › Conference abstract in proceedings – Annual report year: 2013 › Research › peer-review

Cross-correlation frequency-resolved optical gating by molecular vibration for ultrashort pulse
Research output: Chapter in Book/Report/Conference proceeding › Conference abstract in proceedings – Annual report year: 2013 › Research › peer-review

Few-cycle nonlinear mid-IR pulse generated with cascaded quadratic nonlinearities
Research output: Contribution to conference › Conference abstract for conference – Annual report year: 2013 › Research › peer-review

Generating mid-IR octave-spanning supercontinua and few-cycle pulses with solitons in phase-mismatched quadratic nonlinear crystals
Research output: Contribution to journal › Journal article – Annual report year: 2013 › Research › peer-review

Near- and Mid-IR Few-cycle Self-defocusing Soliton Compression in PPLNwaveguide
Research output: Chapter in Book/Report/Conference proceeding › Conference abstract in proceedings – Annual report year: 2013 › Research › peer-review
Near- and MID-IR few-cycle self-defocusing soliton compression in PPLN Waveguide
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2014 › Research › peer-review

Soliton Delay Driven by Cascading and Raman Responses
Research output: Chapter in Book/Report/Conference proceeding › Conference abstract in proceedings – Annual report year: 2013 › Research › peer-review

The anisotropic Kerr nonlinear refractive index of the beta-barium borate (β-BaB2O4) nonlinear crystal
Research output: Contribution to journal › Journal article – Annual report year: 2013 › Research › peer-review

The Kerr nonlinearity of the beta-barium borate crystal
Research output: Chapter in Book/Report/Conference proceeding › Conference abstract in proceedings – Annual report year: 2013 › Research › peer-review

Ultrafast and Broadband Optical Nonlinearities from Strongly Phase-Mismatched Second Harmonic Generation
Research output: Chapter in Book/Report/Conference proceeding › Conference abstract in proceedings – Annual report year: 2013 › Research › peer-review

All solid-state passively mode-locked ultrafast lasers based on Nd, Yb, and Cr doped media
Research output: Chapter in Book/Report/Conference proceeding › Book chapter – Annual report year: 2012 › Research › peer-review

Cascaded Soliton Compression of Energetic Femtosecond Pulses at 1030 nm
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2012 › Research › peer-review

Critical Boundary of Cascaded Quadratic Soliton Compression in PPLN
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2012 › Research › peer-review

High-energy Few-cycle Pulses Directly Generated from Strongly Phase-mismatched Lithium Niobate Crystal
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2012 › Research › peer-review

Improving Soliton Compression Quality with Cascaded Nonlinearities by Engineered Multi-section Quasi-phase-matching Design
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2012 › Research › peer-review
Soliton compression to few-cycle pulses with a high quality factor by engineering cascaded quadratic nonlinearities
Research output: Contribution to journal › Journal article – Annual report year: 2012 › Research › peer-review

Spectral Compression of Intense Femtosecond Pulses by Self Phase Modulation in Silica Glass
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2012 › Research › peer-review

Ultrafast and octave-spanning optical nonlinearities from strongly phase-mismatched cascaded interactions
Research output: Contribution to journal › Journal article – Annual report year: 2012 › Research › peer-review

Optical Cherenkov radiation by cascaded nonlinear interaction: an efficient source of few-cycle near- to mid-IR pulses
Research output: Contribution to journal › Journal article – Annual report year: 2011 › Research › peer-review

Diode laser pumped efficient femtosecond Yb:YAG ceramic laser
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2010 › Research › peer-review

Generation of red light femtosecond pulses from an intra-cavity frequency-doubled Cr4+: Forsterite Laser
Research output: Contribution to journal › Journal article – Annual report year: 2010 › Research › peer-review

High-efficiency diode-pumped femtosecond Yb:YAG ceramic laser

Research output: Contribution to journal › Journal article – Annual report year: 2010 › Research › peer-review

Optical Cherenkov radiation in ultrafast cascaded second-harmonic generation

Research output: Contribution to journal › Journal article – Annual report year: 2010 › Research › peer-review

Diode-pumped passively mode-locked Yb:Y3Ga5O12 laser

Research output: Contribution to journal › Journal article – Annual report year: 2009 › Research › peer-review

Generation of 1053-nm femtosecond pulses by Yb:YAG laser

Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2009 › Research › peer-review

Generation of 170-fs laser pulses at 1053 nm by a passively mode-locked Yb:YAG Laser

Research output: Contribution to journal › Journal article – Annual report year: 2009 › Research › peer-review

Generation of 210 fs laser pulses at 1093 nm by a self-starting mode-locked Yb:GYSO laser

Research output: Contribution to journal › Journal article – Annual report year: 2009 › Research › peer-review

Numerical and experimental investigation of a continuous-wave and passively mode-locked Yb:YAG laser at a wavelength of 1.05 μm

Research output: Contribution to journal › Journal article – Annual report year: 2009 › Research › peer-review

Short pulses give high speeds, precision and intensity

Research output: Chapter in Book/Report/Conference proceeding › Book chapter – Annual report year: 2009 › Communication

Synchronously pumped femtosecond optical parametric oscillator at 1053 nm

Research output: Contribution to journal › Journal article – Annual report year: 2009 › Research › peer-review

Highly Efficient Self-Starting Femtosecond Cr:Forsterite Laser

Research output: Contribution to journal › Journal article – Annual report year: 2008 › Research › peer-review

Projects:

Supercontinuum generation with rugged femtosecond fibre lasers
Rao Delanthabettu Shivarama, S., Bache, M., Moselund, P. M., Zhou, B. & Bang, O.
Anden EU-finansiering
15/02/2017 → 14/02/2020
Project: PhD
**Novel ultrafast mid-IR laser source for spectroscopy**
Bache, M., Zhou, B., Petersen, P. B. & Ashihara, S.
01/01/2015 → 30/04/2016
Project: Research

**Femtosecond few-cycle mid-infrared laser pulses**
Liu, X., Bache, M., Zhou, B., Bang, O., Minardi, S. & Jedrkiewicz, O.
Technical University of Denmark
15/10/2012 → 15/06/2016
Project: PhD

**Cascaded Quadratic Soliton Compression in Waveguide Structures**
Technical University of Denmark
01/07/2011 → 26/09/2014
Project: PhD

**Femto-midIR: Femtosecond few-cycle mid-infrared laser pulses**
Bache, M., Zhou, B., Wise, Dept. of Applied & Engineering Physics, Cornell University, USA, F. W. & Zeng, X.
Forskningsrådene - Andre
01/06/2012 → 31/05/2015
Project: Research

**Activities:**

**Generating ultra-short energetic pulses with cascaded soliton compression in lithium niobate crystals**
Binbin Zhou (Speaker)
1 Jan 2010 → ...
Activity: Talks and presentations › Conference presentations