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

Directional supercontinuum generation: The role of the Soliton
Research output: Contribution to journal › Journal article – Annual report year: 2019 › Research › peer-review

Poor-man's model of hollow-core anti-resonant fibers
Research output: Contribution to journal › Journal article – Annual report year: 2019 › Research › peer-review

Multi-stage generation of extreme ultraviolet dispersive waves by tapering gas-filled hollow-core anti-resonant fibers
Research output: Contribution to journal › Journal article – Annual report year: 2018 › Research › peer-review

Optical fiber
Research output: Patent › Patent – Annual report year: 2018 › Research

Cascaded nonlinearities for ultrafast nonlinear optical science and applications
Bache, M., 2017, DTU - Department of Photonics Engineering. 130 p.
Research output: Book/Report › Doctoral thesis – Annual report year: 2018 › Research

Curvature and position of nested tubes in hollow-core anti-resonant fibers
Research output: Chapter in Book/Report/Conference proceeding › Conference abstract in proceedings – Annual report year: 2017 › Research › peer-review

Experimental verification of the intrinsic ultrafast delayed nonlinearity of gold
Research output: Chapter in Book/Report/Conference proceeding › Conference abstract in proceedings – Annual report year: 2017 › Research › peer-review

Generation of multiple VUV dispersive waves using a tapered gas-filled hollow-core anti-resonant fiber
Research output: Chapter in Book/Report/Conference proceeding › Conference abstract in proceedings – Annual report year: 2017 › Research › peer-review

Influence of dispersion of nonlinearity on coherent supercontinuum generation bandwidth in photonic crystal fibers pumped at 2 μm
Multiple soliton compression stages in mid-IR gas-filled hollow-core fibers
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: Chapter in Book/Report/Conference proceeding › Conference abstract in proceedings – Annual report year: 2017 › Research › peer-review

Soliton-plasma nonlinear dynamics in mid-IR gas-filled hollow-core fibers
Research output: Contribution to journal › Journal article – Annual report year: 2017 › Research › peer-review

Soliton-plasma nonlinear dynamics in mid-IR gas-filled hollow-core fibers
Research output: Contribution to journal › Comment/debate – Annual report year: 2018 › Research › peer-review

Toward single-mode UV to near-IR guidance using hollow-core antiresonant silica fiber
Research output: Chapter in Book/Report/Conference proceeding › Conference abstract in proceedings – Annual report year: 2017 › Research › peer-review

Ultrafast nonlinear dynamics of thin gold films due to an intrinsic delayed nonlinearity
Research output: Contribution to journal › Journal article – Annual report year: 2017 › Research › peer-review

Anisotropic anti-resonant elements gives broadband single-mode low-loss hollow-core fibers
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2016 › Research › peer-review

Antiresonant hollow core fiber with seven nested capillaries
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

Low-Loss Hollow-Core Anti-Resonant Fibers With Semi-Circular Nested Tubes
Research output: Contribution to journal › Journal article – Annual report year: 2016 › Research › peer-review

Low loss mid-IR transmission bands using silica hollow-core anisotropic anti-resonant fibers
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2016 › Research › peer-review

Low-loss single-mode hollow-core fiber with anisotropic anti-resonant elements
Habib, S., Bang, O. & Bache, M., 2016, In : Optics Express. 24, 8, 8 p.
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

Nonlinear Dynamics of Ultrashort Long-Range Surface Plasmon Polariton Pulses in Gold Strip Waveguides
Research output: Contribution to journal › Journal article – Annual report year: 2016 › Research › peer-review

Nonlinear effects in propagation of long-range surface plasmon polaritons in gold strip waveguides
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2016 › Research › peer-review

Nonlinear optical model for strip plasmonic waveguides
Research output: Contribution to journal › Journal article – 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

Octave-spanning supercontinuum generation in a silicon-rich nitride waveguide
Third-order susceptibility of gold for ultrathin layers

Widely tunable mid-IR femtosecond resonant radiation induced by self-defocusing solitons in a quadratic nonlinear medium

High-energy pulse compressor using self-defocusing spectral broadening in anomalously dispersive media

Coherent near-mid-IR supercontinuum generation in highly nonlinear multi-cladding liquid-core fiber designed for flat normal dispersion

Collision between soliton and dispersive wave in phase-mismatched quadratic nonlinear crystals

Dispersive waves induced by self-defocusing temporal solitons in a beta-barium-borate crystal.

Efficient supercontinuum generation in quadratic nonlinear waveguides without quasi-phase-matching

Energetic mid-IR femtosecond pulse generation by self-defocusing soliton-induced dispersive waves in a bulk quadratic nonlinear crystal

Experimental observation of dispersive wave generation by self-defocusing nonlinearity in BBO crystal

High-energy compression of mid-IR pulses in a bulk nonlinear crystal
Improved Low-loss Hollow Core Anti-Resonant Silica Mid-IR Fibers
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2015 › Research › peer-review

Low Loss Double-clad Hollow Core Anti-Resonant Fibers in the Mid-IR
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2015 › Research › peer-review

Low-loss hollow-core silica fibers with adjacent nested anti-resonant tubes
Habib, S., Bang, O. & Bache, M., 2015, In : Optics Express. 23, 13, p. 17394-17406
Research output: Contribution to journal › Journal article – Annual report year: 2015 › Research › peer-review

Mid-IR femtosecond frequency conversion by soliton-probe collision in phase-mismatched quadratic nonlinear crystals
Research output: Contribution to journal › Journal article – Annual report year: 2015 › Research › peer-review

Supercontinuum generation in quadratic nonlinear waveguides without quasi-phase matching
Research output: Contribution to journal › Journal article – Annual report year: 2015 › Research › peer-review

Tunable mid-infrared radiations in quadratic media through near-infrared soliton interactions with second-harmonic resonances
Research output: Chapter in Book/Report/Conference proceeding › Conference abstract in proceedings – Annual report year: 2015 › Research › peer-review

Efficient femtosecond mid-infrared pulse generation by dispersive wave radiation in bulk lithium niobate crystal
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2014 › Research › peer-review

Efficient Femtosecond Mid-infrared Pulse Generation by Dispersive Wave Radiation in Bulk Lithium Niobate Crystal
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2014 › Research › peer-review

Few-cycle solitons and supercontinuum generation with cascaded quadratic nonlinearities in unpoled lithium niobate ridge waveguides
Research output: Contribution to journal › Journal article – Annual report year: 2014 › Research › peer-review

Generating Efficient Femtosecond Mid-infrared Pulse by Single Near-infrared Pump Wavelength in Bulk Nonlinear Crystal Without Phase-matching
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2014 › Research › peer-review

High-energy pulse compressor using self-defocusing spectral broadening in anomalously dispersive media
Highly coherent mid-IR supercontinuum by self-defocusing solitons in lithium niobate waveguides with all-normal dispersion

Low-energy Self-defocusing Soliton Compression at Optical Communication Wavelengths in Unpoled Lithium Niobate Ridge Waveguide

Nanoplasmonic solution for nonlinear optics

Observation of an octave-spanning supercontinuum in the mid-infrared using ultrafast cascaded nonlinearities

Octave-Spanning Mid-IR Supercontinuum Generation with Ultrafast Cascaded Nonlinearities

Soliton-induced nonlocal resonances observed through high-intensity tunable spectrally compressed second-harmonic peaks

Nonlinear wave equation in frequency domain: accurate modeling of ultrafast interaction in anisotropic nonlinear media

Broadband Cherenkov Radiation by Using Group-velocity-matching in Index-guiding Photonic Crystal Fiber

Completely background free broadband coherent anti-Stokes Raman scattering spectroscopy

Cross-correlation frequency-resolved optical gating by molecular vibration for ultrashort pulse
Directional Selective Nonlinear Transmission of Femtosecond Pulses in Glass-Metal Nanocomposites

Few-cycle nonlinear mid-IR pulse generated with cascaded quadratic nonlinearities

Generalized Nonlinear Wave Equation in Frequency Domain

Generating mid-IR octave-spanning supercontinua and few-cycle pulses with solitons in phase-mismatched quadratic nonlinear crystals

Near- and Mid-IR Few-cycle Self-defocusing Soliton Compression in PPLN Waveguide

Near- and MID-IR few-cycle self-defocusing soliton compression in PPLN Waveguide

Pressure tunable cascaded third order nonlinearity and temporal pulse switching

Soliton Delay Driven by Cascading and Raman Responses

The anisotropic Kerr nonlinear refractive index of the beta-barium borate (β-BaB_2O_4) nonlinear crystal

The Kerr nonlinearity of the beta-barium borate crystal
Temporal switching induced by cascaded third order nonlinearity
Research output: Contribution to journal › Journal article – 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

Improved thermal and strain performance of annealed polymer optical fiber Bragg gratings
Research output: Contribution to journal › Journal article – Annual report year: 2011 › Research › peer-review

Modulational instability and solitons in nonlocal media with competing nonlinearities
Research output: Contribution to journal › Journal article – Annual report year: 2011 › Research › peer-review

Nonlocal quintic nonlinearity by cascaded THG in dispersive media
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2011 › Research › peer-review

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

Optical Cherenkov radiation by cascaded nonlinear interaction: an efficient source of few-cycle near- to mid-IR pulses
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2011 › Research › peer-review

Sub-20 fs energetic near-IR pulses generated with cascaded soliton compression in short lithium niobate crystals
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2011 › Research › peer-review

Few-cycle femtosecond optical pulses in the visible and near-infrared: [invited]
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2010 › Research › peer-review

Generating energetic few-cycle pulses at 800 nm using soliton compression with type 0 cascaded quadratic interaction in lithium niobate
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2010 › Research › peer-review
Generating ultra-short energetic pulses with cascaded soliton compression in lithium niobate crystals
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2011 › Research › peer-review

Hvordan er universet sammensat?
Research output: Contribution to journal › Contribution to newspaper - Newspaper article – Annual report year: 2010 › Communication

Optical Cherenkov radiation in ultrafast cascaded second-harmonic generation
Research output: Contribution to journal › Journal article – Annual report year: 2010 › Research › peer-review

Scaling laws for soliton pulse compression by cascaded quadratic nonlineairties (vol 24, pg 2752, 2007)
Research output: Contribution to journal › Journal article – Annual report year: 2010 › Research › peer-review

Type-I cascaded quadratic soliton compression in lithium niobate: Compressing femtosecond pulses from high-power fiber lasers
Research output: Contribution to journal › Journal article – Annual report year: 2010 › Research › peer-review

Controlling the outcome: how extremely short laser pulses can help us in the future
Research output: Chapter in Book/Report/Conference proceeding › Book chapter – Annual report year: 2009 › Communication

Designing microstructured polymer optical fibers for cascaded quadratic soliton compression of femtosecond pulses
Research output: Contribution to journal › Journal article – Annual report year: 2009 › Research › peer-review

Dispersive waves in fs cascaded second-harmonic generation
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2009 › Research › peer-review

Cascaded quadratic soliton compression of high-power femtosecond fiber lasers in Lithium Niobate crystals
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2008 › Research › peer-review

Compression limits in cascaded quadratic soliton compression
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2008 › Research › peer-review

Controllable nonlocal behaviour by cascaded second-harmonic generation of fs pulses
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2008 › Research › peer-review
Soliton compression to ultra-short pulses using cascaded quadratic nonlinearities in silica photonic crystal fibers
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2007 › Research › peer-review

Tailoring the dispersion properties of photonic crystal fibers
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2007 › Research › peer-review

Coherent imaging of a pure phase object with classical incoherent light
Research output: Contribution to journal › Journal article – Annual report year: 2006 › Research › peer-review

Group-velocity matched nonlinear photonic crystal fibers
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2006 › Research › peer-review

Quantum spatial correlations in high-gain parametric down-conversion measured by means of a CCD camera
Research output: Contribution to journal › Journal article – Annual report year: 2006 › Research › peer-review

Second-harmonic generation with zero group-velocity mismatch in nonlinear photonic crystal fibers
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2006 › Research › peer-review

Second-harmonic Generation with Zero Group-Velocity Mismatch in Nonlinear Photonic Crystal Fibers
Spiral intensity patterns in the internally pumped optical parametric oscillator
Research output: Contribution to journal › Journal article – Annual report year: 2001 › Research › peer-review

Spiral waves in optical second-harmonic generation
Research output: Contribution to conference › Conference abstract for conference – Annual report year: 2001 › Research

Modification of pattern formation in doubly resonant second
Research output: Contribution to journal › Journal article – Annual report year: 2000 › Research › peer-review

Modification of pattern formation in doubly resonant second-harmonic generation by competing parametric oscillation
Research output: Contribution to journal › Journal article – Annual report year: 2000 › Research › peer-review

Influence of competing parametric oscillation on pattern formation in second harmonic generation
Research output: Contribution to conference › Conference abstract for conference – Annual report year: 1999 › Research

Instabilities and localized structures in cavity enhanced $\chi^{(2)}$-nonlinear processes
Research output: Contribution to conference › Conference abstract for conference – Annual report year: 1999 › Research

Pattern formation in second harmonic generation with competing parametric oscillation
Research output: Contribution to conference › Conference abstract for conference – Annual report year: 1999 › Research

Stationary space-periodic structures with equal diffusion coefficients
Research output: Contribution to journal › Journal article – Annual report year: 1999 › Research › peer-review

Projects:

Efficient mid-IR supercontinuum generation in quadratic nonlinear waveguides
Li, G., Moselund, P. M., Jepsen, P. U. & Bache, M.
Marie Curie (EU-stipendium)
01/04/2017 → 31/03/2020
Project: PhD

Nanophotonics devices for ultra-fast nonlinear processes in the infrared
Christensen, S., Torres-Company, V., Jepsen, P. U. & Bache, M.
Technical University of Denmark
01/04/2017 → 16/08/2020
Project: PhD

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

Ultrafast mid-IR nonlinear optics in gas-filled hollow-core photonic crystal fibers
Habib, S., Bache, M., Bang, O., Lægsgaard, J., Joly, N. & Biancalana, F.
Technical University of Denmark
15/04/2014 → 14/06/2017
Project: PhD

Spatial solitons, vortices, and patterns in non-linear optical media
Bache, M., Christiansen, P. L., Bang, O., Rasmussen, J. J., Tromborg, B., Firth, W. J., Saffman, M. & Pedersen, T. G.
DTU, Samfinansiering
01/04/1999 → 08/11/2002
Project: PhD

Hollow-core fibers for high power laser applications
Michieletto, M., Bang, O., Lyngsøe, J. K., Lægsgaard, J., Bache, M., Correra, R. A. & Belardi, W.
Eksternt EU-finansieret
01/01/2013 → 30/09/2016
Project: PhD

Laser frequency standards based on gas-filled hollow-core fibres
Triches, M., Bang, O., Hald, J., Lægsgaard, J., Bache, M., Arlt, J. & Corwin, K.
Eksternt EU-finansieret
01/02/2013 → 02/11/2016
Project: PhD

2-10um mid-infrared supercontinuum light sources
Petersen, C. R., Bang, O., Møller, U. V., Bache, M., Buczynski, R. & Dudley, J. M.
Offentlig finansiering
01/08/2013 → 02/11/2016
Project: PhD

High-intensity terahertz radiation for nonlinear spectroscopy at long wavelengths
Pedersen, P. K., Jepsen, P. U., Bache, M., Keiding, S. R. & Hegmann, F.
Eksternt finansieret virksomhed
01/04/2012 → 18/06/2015
Project: PhD

Femtosecond few-cycle mid-infrared laser pulses
Liu, X., Bache, M., Zhou, B., Bang, O., Minardi, S. & Jedrkwicz, 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

Terabit/s Optical Regeneration
Rege, K. M., Morioka, T., Galili, M., Oxenløwe, L. K., Bache, M., Petropoulos, P. & Schröder, J.
Technical University of Denmark
01/04/2013 → 08/02/2017
Project: PhD
Nonlinear optical properties of ultra-thin metal layers
Lysenko, O., Laurynenka, A., Bache, M., Mortensen, N. A., Leosson, K. & Shalaev, V. M.
Technical University of Denmark
15/06/2013 → 17/08/2016
Project: PhD

Continuous Wave Supercontinuum Light Sources based on Tapered Photonic Crystal Fibres
Larsen, C., Bang, O., Hansen, K. P., Mattsson, K. E., Bache, M., Ul Alam, S. & Ludvigsen, H.
Technical University of Denmark
01/08/2010 → 19/03/2014
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

Nanostructured polymer photonic crystal fibers for effective second-harmonic generation
Bache, M.
Forskningsrådene - STVF
01/06/2005 → 30/06/2008
Project: Research

COPULCO: Cascaded Optical Pulse Compressor
Bache, M. & Zeng, X.
Forsk. EU - Rammeprogram
16/05/2011 → 14/05/2013
Project: Research

Femto-VINIR: Few-cycle femtosecond optical pulses in the visible and near-infrared
Bache, M., Bang, O., Krolikowski, W., Jepsen, P. U., Cooke, D. & Wise, F. W.
Forskningsrådene - STVF
01/04/2009 → 31/03/2012
Project: Research

Activities:

Ultrafast mid-IR laser pulses - enabling new frontiers in science
Morten Bache (Invited speaker)
6 Jun 2016
Activity: Talks and presentations › Conference presentations

Ultrashort and broadband mid-IR pulses: challenges and solutions
Morten Bache (Invited speaker)
24 Mar 2016
Activity: Talks and presentations › Conference presentations

Reviews in Physics (Journal)
Morten Bache (Editor)
1 Jan 2016 → …
Activity: Editorial work and peer review › Journal editor › Research

Ultra-korte laserpulser i fremtidens forskning
Morten Bache (Speaker)
10 Jun 2010
Activity: Talks and presentations › Conference presentations

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

Phase-matching with a twist: Second-harmonic generation in birefringent periodically poled fibers (Journal)
Morten Bache (Reviewer)
1 Jan 2010 → …
Activity: Editorial work and peer review › Peer review of manuscripts › Research