2011 Conference on Lasers and Electro-Optics

(CLEO 2011)

Baltimore, Maryland, USA
1-6 May 2011

Pages 1-696

IEEE Catalog Number: CFP11CLE-PRT
ISBN: 978-1-4577-1223-4

TABLE OF CONTENTS

QMF ATOMS AND MOLECULES IN STRONG FIELDS:

QMG ATTOSECOND SCIENCE:

QMH COHERENT PHENOMENA IN SEMICONDUCTORS:

QMI INTEGRATED NONLINEAR DEVICES:

QMJ HIGH FIELD-PLASMAS AND SOURCES:

QMK QUANTUM CONTROL IN SOLID-STATE SYSTEMS:

QTUA FRONTIER APPLICATIONS OF PLASMONICS:

THZ GENERATION AND PULSE DIAGNOSTICS:

QTUC ULTRAFAST X-RAYS:

QTUD THZ METAMATERIALS I:

QTUE PLASMONIC OPTICAL DEVICES:

QTUF FREQUENCY COMBS AND CARRIER-ENVELOPE PHASE PHASE PHENOMENA:

QTUG INVISIBILITY AND ABSORBERS:

QTUH PLASMONIC FIELD ENHANCEMENT AND CONCENTRATION:

QYUI COMPLEX MEDIA:

QTUJ QUANTUM MEASUREMENT AND METROLOGY:

QTUK OPTICAL PROCESSES IN GRAPHENE:

QTUL EXCITON AND CARRIER DYNAMICS IN NANOPHOTONIC SYSTEMS:

QTUM METATRONICS AND TRANSFORMATION OPTICS:

QTUN ULTRAFAST STRUCTURAL DYNAMICS AND COLLECTIVE PHENOMENA:

QTUO SPIN COHERENCE:

QWA OPTICAL WAVEGUIDES AND QUANTUM INFORMATION SCIENCE:

QWB QUANTUM COMPUTING AND METROLOGY WITH COLD MATTER:

QWC EMISSION CONTROL WITH NANOOPTICS:

QWD STRONGLY CORRELATED ELECTRON SYSTEMS:

QWE OPTOMECHANICAL SYSTEMS I:

QWF QUANTUM INTERFACE OF LIGHT AND MATTER:

QWG OPTOMECHANICS AND OPTICAL FORCES:

QWH DYNAMICS IN NANOWIRES, RODS AND TUBES:

QWI OPTOMECHANICAL SYSTEMS II:

QTHA ELECTRO-MAGNETIC METAMATERIALS:

QTHB SYMPOSIUM ON THE ZENO EFFECT IN OPTOELECTRONICS AND QUANTUM OPTICS I:

QTHC FUNDAMENTALS OF NANO-OPTICS AND PLASMONICS:

QTHD DISCRETE OPTICS AND PERIODIC STRUCTURES:

QTHE SINGLE PHOTONS: SOURCES AND DETECTORS:

QTHF DISORDERED MATERIAL:

QTHG SYMPOSIUM ON THE ZENO EFFECT IN OPTOELECTRONICS AND QUANTUM OPTICS II

QTHH NONLINEAR AND ULTRAFAST NANOPHOTONICS:

QTHI OPTICAL FILAMENTATION AND RELATED NONLINEAR PHENOMENA:

QTHJ QUANTUM STORAGE AND FREQUENCY ENTAGLEMENT:

QTHK TUNABLE AND FLUID METAMATERIALS:

QTHL POSITIONING, COUPLING AND FOCUSING IN NANOPHOTONIC SYSTEMS:

QTHM QUANTUM OPTICS IN CAVITIES AND WAVEGUIDES:

QTHN QUANTUM PHOTONICS:

QTHO FUNDAMENTAL TOPICS IN QUANTUM SCIENCE:

QTHP HYPERBOLIC AND ANISTROPIC METAMATERIAL:

QTHQ PLASMON OPTICS:

QTHR QUANTUM OPTICS WITH QUANTUM DOTS:

QTHS LINEAR AND NONLINEAR WAVE PROPAGATION:

QTHT QUANTUM COMMUNICATION AND MULTIPARTITE ENTAGLEMENT:

QFA PLASMONIC METAMATERIALS:

QFB PLASMONICS AND NOVEL STRUCTURES:

QFC NANOPHOTONIC AND PLASMONIC CONFINEMENT:

QFD QUANTUM IMAGING AND PHASE ESTIMATION:

QFE ACTIVE PLASMONICS:

QFF SOLITONS AND NONLINEAR WAVES:

QFG SINGLE PHOTON NANO-OPTICS:

QFH ION TRAPS AND NANOMECHANICAL SYSTEMS:

CLEO: SCIENCE & INNOVATIONS TECHNICAL SESSIONS:
CMA EFFICIENCY ENHANCEMENT BY PATTERNING:

YTTERBIUM AND PRASEODYMIUM LASERS:

CMC ADVANCED NONLINEAR CONFIGURATIONS:

CMD ULTRAFAST FIBER LASERS:

CME NANOWIRES-NOVEL MATERIAL AND DEVICE CONCEPTS:

CMF TERAHERTZ QUANTUM CASCADE LASERS:

CMG REMOTE OPTICAL SENSING:

CMH ADVANCED LASER TECHNIQUES:

CMI SEMICONDUCTOR LASER RESONATORS:

CMJ NONLINEAR MIXING IN OPTICAL FIBERS:

CMK MODE-LOCKED FIBER LASERS I:

CML 3D NANO FABRICATION:

CMM THZ SOURCES I:

CMN BIOMEDICAL AND NANOPARTICLE OPTICAL SENSING:

CMO NANOPHOTONIC INTEGRATION:

CMP ND LASERS:

CMQ QUANTUM CASCADE LASER:

CMR QUASI-PHASE MATCHED NONLINEAR OPTICS:

CMS MODE-LOCKED FIBER LASERS II:

ENHANCED EFFICIENCY PHOTOVOLTAICS:

CMU NANO-STRUCTURED LEDS:

CMV FABRICATION AND CHARACTERIZATION OF NANO PLASMONIC DEVICES:

CMW THZ SOURCES II:

CMX PLASMONIC DEVICES:

CMY 1.5-5Mm LASERS:

CMZ FIBER DEVICES:

CMAA NONLINEAR OPTICS IN WAVEGUIDES AND NANOSTRUCTURES:

CMBB HIGH-REPETITION-RATE PULSED SOURCES:

CMCC NANOSTRUCTURES FOR PHOTOVOLTAICS:

OPTOFLUIDIC CELL, PARTICLE AND FLUID MANIPULATION:

CMEE NANOFABRICATION CONCEPTS:

CMFF_THZ TECHNOLOGY:

CTUA_ULTRAFAST NOISE AND PHASE-LOCKING:

CTUB_FIBER PLASMONS AND VORTICES:

CTUD APPLICATIONS OF OPTICAL PARAMETRIC PROCESSES:

CTUE HIGH LASER POWER MATERIAL AND DEVICES:

CTUF NOVEL OPTOFLUIDIC APPLICATIONS AND OPTOFLUIDIC ENERGY:

CTUG SEMICONDUCTOR NANOLASERS:

CTUH ULTRAFAST MEASUREMENT TECHNIQUES:

CTUI CW FIBER SOURCES:

PETAWATT LASER TECHNOLOGY:

CTUK OPTICAL PARAMETRIC OSCILLATORS:

CTUL NOVEL NONLINEAR MATERIALS AND DEVICE CONCEPTS:

CTUM OPTOFLUIDIC DETECTION AND IMAGING:

CTUN MICRO AND NANO-PHOTONIC MODULATORS:

CTUO ULTRAFAST PULSE CHARACTERIZATION:

CTUP NOVEL SEMICONDUCTOR LASERS

CTUQ ULTRAFAST AND BROADBAND NONLINEAR OPTICS:

CTUR ADVANCES IN III-V LASERS:

CTUS MID-INFRARED AND NONLINEAR DEVICES:

CTUT FEW-CYCLE INFRARED:

CTUU ULTRAVIOLET LEDS: SCIENCE AND INNOVATION:

CTUV LASER LOCKING AND BEAM COMBINING:

CTUW NONLINEAR OR PLASMONIC COMPONENTS:

CTUX RAMAN OR BRILLOUIN CONVERSION AND APPLICATIONS:

CTUY ORGANIC EMITTERS AND ABSORBERS:

CTUAA NANOSTRUCTURED MATERIALS AND DEVICES:

CWA THZ PLASMONICS:

CWB OCT, TOMOGRAPHY, AND SENSING:

CWD SYMPOSIUM ON FIBER PARAMETRIC DEVICES AND APPLICATIONS I: TELECOM APPLICATIONS:

CWE LASER FABRICATION FOR LIFE SCIENCE APPLICATIONS:

CWF TOWARD MORE EFFICIENT VISIBLE LEDS

CWG HIGH INTENSITY AND SHORT PULSE:

CWH OPTICAL MEASUREMENTS AND WAVEFORM CHARACTERIZATION:

CWI ULTRAFAST PULSE GENERATION I:

CWJ ADVANCED FORMATS:

CWK THZ METAMATERIALS II:

OPTOFLUIDIC BIOSENSING AND BIOMOLECULAR ANALYSIS:

CWM SILICON MICRORESONATORS:

CWN SYMPOSIUM ON FIBER PARAMETRIC DEVICES AND APPLICATIONS II: PHYSICS AND SOURCES:

CWO ADVANCED ULTRAFAST LASER PROCESSING:

CWP THIN DISK AND WAVEGUIDE LASER:

CWQ ASTRO-COMBS AND SOURCE CALIBRATION :

CWR_ULTRAFAST PULSE GENERATION II:

CTHA_HIGH-SPEED ON-CHIP SIGNAL PROCESSING:

CTHB_EXTREME WAVELENGTH COMB GENERATION:

CTHC GUIDED-WAVE OPTICAL SENSING:

CTHD NEW WAVELENGTH FIBER LASERS:

CTHE THZ QCLS:

CTHF NONLINEAR MICROSCOPY:

CTHG MODE-LOCKED LASERS:

CTHH COHERENT SYSTEMS:

CTHI OPTICAL SIGNAL PROCESSING:

CTHJ OPTOMECHANICS I:

CTHK SYMPOSIUM ON BROADBAND SPECTROSCOPY: NEW TECHNIQUES AND SOURCES I: DUAL-COMB HETERODYNE SPECTROSCOPY:

CTHL FIBER BASED SENSORS:

CTHM BANDGAP AND CRYSTALLINE FIBERS:

CTHN THZ WAVEGUIDES:

CTHO OFDM:

CTHP SILICON OPTICAL LINKS:

NANOPHOTONIC SENSORS:

CTHR NOVEL APPLICATIONS OF NONLINEAR OPTICS:

CTHS CLEO SYMPOSIUM ON BROADBAND SPECTROSCOPY: NEW TECHNIQUES AND SOURCES II: SPECTROSCOPIC EXPERIMENTS:

CTHT GAS PHASE SENSING I:

CTHU FIBER AMPLIFIERS AND LASERS:

CTHV THZ IMAGING:

CTHW ADVANCES IN BIOLOGICAL MICROSCOPY:

CTHX FIBER TRANSMISSION:

CTHY MICROWAVE PHOTONICS:

CTHZ NOVEL WAVEGUIDES AND RESONATORS:

CTHAA MODE-LOCKED SOLID STATE LASERS:

CTHBB CLEO SYMPOSIUM ON BROADBAND SPECTROSCOPY: NEW TECHNIQUES AND SOURCES III: SOURCES:

CTHCC GAS PHASE SENSING II:

CTHDD PULSED FIBER LASERS:

CTHEE THZ SPECTROSCOPY:

CTHFF FILAMENTATION:

CTHGG SPATIAL MULTIPLEXING AND CROSSTALK:

CTHHH WAVEGUIDES AND PASSIVE COMPONENTS:

CFA OPTOMECHANICS II:

CFB INTEGRATION ON SILICON:

CFC OPTICAL FREQUENCY STANDARDS AND SIGNAL DISSEMINATION:

CFD HIGH SPEED LASERS:

CFE BEAM COMBINING AND STABILIZATION OF FIVER AMPLIFIERS:

CFF NOVEL RAMAN SENSING TECHNIQUES I:

CFG ULTRAFAST PULSE SHAPING:

CFH ACCESS NETWORKS:

CFI PHOTONIC CRYSTAL DEVICES:

CFJ OPTICAL COMPONENTS:

CFK OPTICAL FREQUENCY COMBS:

CFL NOVEL SEMICONDUCTOR LASER MATERIALS:

CFM OPTICAL FIBER MEASUREMENT:

CFN NOVEL RAMAN SENSING TECHNIQUES II:

CFO ULTRAFAST DYNAMICS:

CFP MEASUREMENT AND PROCESSING:

CLEO: APPLICATIONS & TECHNOLOGY TECHNICAL SESSIONS: AMA FUNDAMENTALS OF LASER PROCESSING FOR ADDING, MODIFYING, AND JOINING MATERIALS:

AMB LASER SYSTEMS DEVELOPMENT FOR INDUSTRIAL APPLICATIONS:

AMC PATHS TO HIGH EFFICIENCY PHOTOVLTAICS:

AMD LASER MICRO AND NANO STRUCTURING:

AME BIOMEDICAL THERAPEUTIC APPLICATIONS:

AMF MEDICAL APPLICATIONS OF FLUORESCENCE:

ATUA AIRBORNE AND SPACE LIDAR:

ATUB SPECTROSCOPIC TECHNOLOGIES FOR TISSUE DIAGNOSTICS:

ATUC COHERENCE DOMAIN SPECTROSCOPY AND IMAGING:

ATUD APPLICATIONS OF MID-UV LEDS:

SENSORS AND IMAGING FOR SCIENTIFIC AND SECURITY APPLICATIONS:

ATUF LASERS FOR GOVERNMENT NATIONAL SCIENCE AND SECURITY APPLICATIONS:

AWA ENERGY EFFICIENT LIGHTING:

JOINT CLEO: 2011 TECHINICAL SESSIONS:
JMA JOINT SYMPOSIUM ON HYBRID QUANTUM NANOPLASMONIC SYSTEMS-TOWARDS ACTIVE NANOPLASMONICS I: PLASMON NANOLASERS:

JMB JOINT SYMPOSIUM ON NANO-BIO-PHOTONICS I: NANOSCALE IMAGING AND SENSING FOR BIOMEDICAL APPLICATIONS:

JMC ENVIRONMENTAL AND EXPLOSIVE SENSING BY QUANTUM CASCADE LASERS:

JMD JOINT SYMPOSIUM ON HYBRID QUANTUM NANOPLASMONIC SYSTEMS-TOWARDS ACTIVE NANOPLASMONICS II: NANOPLASMONIC SYSTEMS WITH GAIN:

JME JOINT SYMPOSIUM ON NANO-BIO-PHOTONICS II: NANOPARTICLES FOR BIOMEDICAL DIAGNOSIS AND TREATMENT:

JMF JOINT SYMPOSIUM ON HYBRID QUANTUM NANOPLASMONIC SYSTEMS-TOWARDS ACTIVE NANOPLASMONICS III: SINGLE PHOTONS AND PLASMONIC ANTENNAS

JMG NOVEL OPTICAL SYSTEMS FOR INDUSTRIAL APPLICATIONS:

JTUA JOINT SYMPOSIUM ON QUANTUM COMMUNICATIONS I: OVERVIEW:

JTUB JOINT SYMPOSIUM ON SEMICONDUCTOR ULTRAVIOLET LEDS AND LASERS: SEMICONDUCTOR NEAR-ULTRAVIOLET LASERS AND LEDS:

JTUC JOINT SYMPOSIUM ON QUANTUM COMMUNICATIONS II: NETWORKS:

JTUD JOINT SYMPOSIUM ON SEMICONDUCTOR ULTRAVIOLET LEDS AND LASERS: SEMICONDUCTOR MID-UV LEDS AND LASERS:

JTUE LASERS IN ENVIRONMENTAL SENSING:

JTUF JOINT SYMPOSIUM ON QUANTUM COMMUNICATIONS III: FUTURE DIRECTIONS:

JTUG PHOTOACOUSTIC IMAGING & MICROSCOPY:

JTUH LASER DIRECT WRITE FABRICATION:

JTUI NANOPHOTONICS AND INTEGRATION JOINT POSTER SESSION:

JWA TOWARDS APPLICATIONS JOINT POSTERS SESSION:

JTHA MICROSCOPIC IMAGING AND ENDOSCOPY:

JTHB NONLINEAR AND QUANTUM SCIENCE AND MEASUREMENTS JOINT POSTER SESSION: