

ATHANASIOS NICHOLAS CHRYSSIS

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PROFILE

Electrical and Computer Engineer with broad experience in optical module design, development, and working with offshore fab and component partners. Solid background in physics and engineering. Specializing in lasers, optics, semiconductor fabrication, packaging, and testing. Excellent analytical skills.

Optical module development • Optomechanical design and simulation • NPI • Semiconductor processing, packaging, and testing • Industrial laser systems and consumer laser products • Root cause, failure analysis

WORK EXPERIENCE

Apple, Inc., Cupertino, California (4yrs) **2019-April 2023**
Depth system integration lead (2019-2023)

- Responsible for engineering prototype builds of the FaceID module for certain released iPhone models
- Worked closely with offshore partners and engineering teams to address build and reliability issues during each product development cycle (EVT, DVT, etc.), before transferring the process to operations
- Led FA analysis through DOEs and communicated the conclusions to responsible engineering teams (eg. mechanical, optical, FW, testing, etc.)
- Maintained the module engineering specifications, making sure performance and design requirements are aligned

Coherent, Inc., Santa Clara, California (8.5yrs) **2010-2019**
Manufacturing Engineer (2017-2019), Staff Development Engineer (2015-2017), Sr. Dev. Engineer (2010-2015)

- In charge of a broad portfolio of Coherent's diode laser products
- Production tools, yield monitoring, process development and control, preventive maintenance, failure analysis
- Led the development effort of a high-power 3kW fiber coupled pump laser module. Engineering development, production release, system integration
- NPI of high-power diode products for major industrial and military customers (printing, manufacturing, countermeasures, etc.). Proto to production, DFM, BOM, documentation, customer engagement
- Continuous contribution to Coherent's intellectual property in the optical and packaging fields
- Built optical setups and characterization stations for R&D and production
- Mechanical design, tooling development, drafting, working with CMs
- Performed optical, thermal, stress FEA, and flow simulations for water-cooled laser modules

University of Maryland, Department of Electrical and Computer Engineering, College Park, Maryland (6yrs) **2004-2010**
Research Assistant, Photonics Switching and Integrated Optoelectronics Laboratory

- First demonstration of external cavity Mid-IR IC (Interband Cascade) laser for chemical sensing applications
- Design and fabrication of multilayer, thin-film, dielectric, anti-reflection coating for MWIR
- Development and simulation of high-sensitivity evanescent field fiber Bragg grating chemical and biological sensors
- Novel fiber stress sensor using higher order mode propagation modes for parametric discrimination
- Built an optical frequency domain reflectometer (OFDR) for avionic fiber networks failure detection and ranging
- Performed independent research and assisted with transition of projects to other researchers as well as lab and equipment training

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EDUCATION

Cert. , Data Analytics Boot Camp, UC Berkeley Extension	Aug 2023-Feb 2024(exp)
M.S., Ph.D. , Electrical engineering, University of Maryland, College Park, Maryland Thesis: Design and fabrication of high-performance interband cascade tunable external cavity lasers (Distinguished dissertation fellowship award, March 2010) Advisor: Professor Mario Dagenais	2010
B.S. , Physics, National and Kapodistrian University of Athens, Athens, Greece Thesis: Non-linear optics and optical solitons Advisor: Professor Dimitrios J. Frantzeskakis	2002

TECHNICAL SKILLS AND EXPERTISE

- Optical design and development of consumer (laser projector, camera) to kW class laser systems
- Working with offshore manufacturing partners (component, module and final assembly)
- Mechanical design, drafting, tool development, tolerance analysis
- Reliability testing (drop, shock and vibe, water/humidity ingress, thermal, etc)
- Knowledge of a broad range of materials properties, materials manufacturing methods and coating/plating/anodization processes, metallurgy, machining experience
- Semiconductor device processing, photolithography, e-beam and thermal evaporation, wet chemical processes, dry plasma etching, electroplating, cleave/coating, mask design, waveguide and diode design
- Semiconductor, optoelectronic packaging, die attach, wirebonding, fiber splicing, polishing
- Design and e-beam growth of optical coatings, in situ ellipsometry, reflectometry
- Metrology, inspection tools, SEM, Sonoscan, Zygo, Keyence, FLIR thermal imaging
- Electrical and optical characterization, broad experience with lab instrumentation, measurements in cryogenic environment, short pulse(ns) and CW
- Maintenance and operation of pulsed laser deposition system, KrF2 excimer laser, SEM, e-beam deposition system, as well as production diode lensing station and die attach systems

COMPUTER SKILLS

- Design Packages: SolidWorks (thermal, mechanical stress, flow), NX, Autodesk CFD, Zemax, Allegro, LabView, Rsoft (BeamProp, FDTD), Adobe
- Programing languages: Matlab, Python, C/C++

SELECT PATENTS

A. N. Chryssis, G. Ryu, D. A. Schleuning, "Aberration compensated diode-laser stack," Application #20170212355.
G. Ryu, **A. N. Chryssis**, D. A. Schleuning, "Stackable electrically-isolated diode-laser bar assembly," Application #20170179686.
D. A. Schleuning, **A. N. Chryssis**, "Macro channel water-cooled heat-sink for diode laser bars," Patent #9065238
A. N. Chryssis, S. M. Lee, S. S. Saini, and M. Dagenais, "Highly sensitive evanescent field fiber Bragg grating sensors for chemical and biological sensing," Provisional Patent.
G. Ryu, **A. N. Chryssis**, M. Dagenais, "High resolution optical fiber diagnostic device," Provisional Patent.
M. Dagenais, **A. N. Chryssis**, "Low thermal impedance interband cascade laser," Provisional Patent.