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#### SUMMARY

* 8+ years experience in developing novel optical components for applications including displays (flat-panel, projection, head-mounted), lighting, telecommunications, spectroscopy, etc.
* Hands on skills in optical alignment, prototyping, and characterization of complex optical systems based on interferometry, spectrometry, polarimetry, radiometry, and microscopy.
* Experience managing small research groups, projects, and international manufacturing teams
* Collaborative team player with strong analytical and presentation (oral and written) skills
* Author of several patent applications and peer-reviewed research publications
* Fully authorized to work in the U.S. (Permanent Resident, EB-1A)

#### SKILLS

* **Project Management:** Omniplan, Subtask, Merlin, Mindnode, Zoho,
* **Modeling:** TracePro, Berreman 4 x 4, Jones & Mueller calculus, Rigorous Coupled Wave Analysis (RCWA), Finite Difference Time Domain (FDTD)
* **Characterization:** spectrometry, interferometry, microscopy, colorimetry, radiometry, polarimetry, fiber optics, cameras, sensors, optical benches, lasers (UV, VIS, NIR), LEDs, Benchtop SEM
* **Software:** Matlab, LabVIEW, Mathematica, Maple, C++, Adobe Illustrator, Linux/Unix, Microsoft Office (Excel, Powerpoint, Visio)
* **Material Knowledge:** liquid crystals, photo-alignment, surface chemistry, semiconductors
* **Fabrication:** photolithography, cleanroom, process development, thin film deposition, and etching.

#### EXPERIENCE

#### Engineering Physicist (2015-Present)

Acuity Brands Lighting, Advanced Technologies and Concepts Center, Herndon, VA

* Worked on novel concepts related to advanced dynamic lighting products
* Investigated several novel optical technologies for improving acuity brands product portfolio
* Performed optical simulations for dynamic beam shaping applications
* Characterized optical properties of various novel optics using standard equipment
* Developed algorithms for tuning and control of lighting color parameters such as correlated color temperature, color rendering index, etc.

#### Senior Research Scientist (2009-2015)

ImagineOptix Corporation, Raleigh, NC

* Inventor of several optical technologies being commercialized by ImagineOptix Corporation
* Collaborated with clients from various optical industries and assisted in the commercialization of novel thin film optical elements
* Designed custom optical solutions for various customers using patented technologies
* Supervised international manufacturing team in volume production of thin film optics

#### Senior Research Scholar (2014-2015)

Department of Electrical and Computer Engineering, North Carolina State University

#### Developed novel optical elements called Bragg type Polarization Gratings (PGs)

#### for optical telecommunications (C-band: 1550 nm) and Head Mounted Displays (HMDs)

#### Performed large aperture optic defect characterization using polarization microscope

#### Post-Doctoral Researcher (2009-2014)

Department of Electrical and Computer Engineering, North Carolina State University

#### Invented achromatic retarders for LCDs, color filters, and optical pickup readers

#### Developed efficient Polarization Conversion Systems (PCS) for portable LCD projectors

#### Designed broadband polymer Polarization Gratings for LCDs, astronomy, and spectrometry

#### Demonstrated a polarizer free, high throughput liquid crystal light shutter

#### Constructed a low cost polarimeter (LabVIEW) using standard polarization optics

**Research Assistant (2006-2009)**

Department of Electrical and Computer Engineering, North Carolina State University

* Analyzed Liquid Crystal Polarization Gratings using Elastic Continuum and FDTD methods
* Designed energy efficient portable LCD projector prototypes using Polarization Gratings
* Designed lab modules for LCDs, OLEDs, solar cells, and organic transistors

#### EDUCATION

**Ph.D. Electrical Engineering, May 2009**

North Carolina State University, Raleigh, NC *-* C.G.P.A. 4.0/4.0

**B.Tech. Electrical Engineering, May 2004**

Indian Institute of Technology Madras, Chennai, India - C.G.P.A. 8.24/10.0

#### PATENTS

* “Low-twist chiral optical layers and related fabrication methods”, Inventors: R. K. Komanduri, C. Oh, and M. J. Escuti, **US Patent No: 8,520,170**
* “Polarization-Independent Liquid Crystal Display Devices Including Multiple Polarization Grating Arrangements and Related Devices”, Inventors: R. K. Komanduri, C. Oh, M. J. Escuti, B. L. Conover, and J. Kim, **US Patent No: 8,537,310**
* 5 more patents, applications and invention disclosures pending (full list available on request)

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#### PUBLICATIONS

* K. J. Hornburg, R. K. Komanduri, and M. J. Escuti, "Multiband retardation control using multi-twist retarders," *Proc. SPIE – Polarization: Measurement, Analysis, and Remote Sensing XI*, vol. **9099**, art. no. 90990Z, 2014
* R. K. Komanduri, K. F. Lawler, and M. J. Escuti, “Multi-twist retarders: broadband retardation control using self-aligning reactive liquid crystal layers,” Optics Express, vol. **21**, pp. 404-420, 2013
* 14 more publications in journals and conference proceedings (full list available on request)

**ASSOCIATIONS**

* Member of **Phi Kappa Phi** and **Eta Kappa Nu** honor societies since 2008
* Member of **SPIE** - The International Society for Optics and Photonics since 2006
* Member of **SID -** Society for Information Display since 2006
* Member of **OSA** - Optical Society of America since 2007
* Invited reviewer for **OSA** since 2009. Reviewed more than 30 articles for publication in Optics Express, Optics Letters, Applied Optics, Optics Materials Express, etc.

#### AWARDS

* Best oral presentation ECE-Graduate Student Association Seminar, NCSU Spring 2007
* Best poster presentation ECE-Graduate Student Association Seminar, NCSU Spring 2006
* Travel grant awards for **SPIE** and **OSA** conferences in 2006, 2008, 2009, and 2012
* Gold medal for ranking 4th in state level Math Olympiad 1998

#### PRESENTATIONS

* **SPIE 2012** –“Multi-twist Retarders for Broadband Polarization Transformation”
* **SID 2009** – “Polarization Independent Projection Systems” using Thin Film Polymer Polarization Gratings and Standard Liquid Crystal Microdisplays”
* **SPIE 2008** – “Reflective liquid crystal polarization gratings with high efficiency and small pitch”
* **SID 2006**– “FDTD and elastic continuum analysis of the liquid crystal polarization grating”

#### REFERENCES Available upon request