

Robert V. Chimenti

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EDUCATION

Rowan University, Glassboro, NJ

Ph.D. Material Science & Engineering

Thesis: Towards a Practical Method for Monitoring Kinetic Processes in Polymers with Low-Frequency Raman Spectroscopy

Advisor: Dr. Samuel E. Lofland

University of Dayton, Dayton, OH

M.S. Electro-Optics

Thesis: Sparse Frequency Linearly Frequency Modulated Laser Radar Signal Generation, Detection, and Processing

Advisor: Dr. Peter E. Powers

Rowan University, Glassboro, NJ

B.S. Physics *summa cum laude*
Minor in Mathematics

Peirce College, Philadelphia, PA

B.S. Business Administration
Concentration in Management

Camden County College, Blackwood, NJ

A.A.S. Photonics
Concentrations in Laser/Electro-Optic
Technology and Fiber-Optic Technology

WORK EXPERIENCE

Rowan University, Glassboro, NJ

Assistant Professor & Photonics Coordinator

Visiting Assistant Professor & Photonics Coordinator

Instructor (3/4-time)

Adjunct Professor

September 2024 -Present
September 2021 — August 2024
September 2019 — August 2021
January 2013 — August 2019

RVC Photonics, LLC, Pitman, NJ

Director & Principal Consultant

July 2018 — Present

Rowan College of South Jersey, Sewell, NJ

Adjunct Professor of Photonics

May 2022 — Present

Innovative Photonic Solutions, Monmouth Junction, NJ (now Metrohm Spectro)

Product Line Manager, Sr. Strategic Applications Engineer

September 2013 — July 2018

B&W Tek Inc., Newark, DE (now Metrohm Spectro)

*Manager, Marketing & Strategic Partnerships, Product Manager,
Sales Support Engineer, Interim Sales Manager*

May 2009 — August 2013

University of Dayton, Dayton, OH

Graduate Assistant (Air Force Research Labs Contractor)

May 2007 — April 2009

Light Age, Inc., Somerset, NJ

Sales Engineer, Service Engineer, Laser Technician

January 2005 — April 2007

Edmund Optics, Barrington, NJ

Quality Assurance Intern

December 2002 — January 2003

COURSES TAUGHT

Laser Physics, Introduction to Optical Design, Optics and Light, Electricity and Magnetism II, Electricity and Magnetism I, Introductory Electricity & Magnetism, Physics II w/o Calculus, Light, Lasers, Geometric Optical Design, Introductory Physics Concepts

PEER REVIEWED PUBLICATIONS

J. Tu, J.D. Engelhardt, R.V. Chimenti, M.H. Barkow, J.C. Crux-Robles, J.F. Stanzione, G.R. Palmese. "Additive manufacturing of polymeric gradient index optics via grayscale digital light processing vat photopolymerization technology." *Additive Manufacturing*. in review.

Chimenti RV, Bensley KA, Lehman-Chong AM, et al. Influence of Rheological Modifications on Primary Network Chemical and Structural Cure Kinetics for an Interpenetrating Polymer Network Resin. *Applied Spectroscopy*. 2024;0(ja). <https://doi.org/10.1177/00037028241270637>

Yongqi Yang, Sneha Sreekumar, Robert V. Chimenti, Maxim Veksler, Kai Song, Sofia Zhang, Daphne Rodas, Victoria Christianson, and Deirdre M. O'Carroll, Polypropylene-Derived Luminescent Carbon Dots. *ACS Materials Lett.* 2024, 6, 5, 1968–1976; <https://doi.org/10.1021/acsmaterialslett.3c01419>.

R. V. Chimenti, A. M. Lehman-Chong, A. M. Sepcic, J. D. Engelhardt, J. T. Carriere, K. A. Bensley, A. Markashevsky, J. Tu, J. F. Stanzione, S. E. Lofland, "Method for determining resin cure kinetics with low-frequency Raman spectroscopy,". *Analyst*, 2023, 148 5698-5706. <https://doi.org/10.1039/d3an01099f>.

R. V. Chimenti, J. T. Carriere, D. M. D'Ascoli, J. D. Engelhardt, A. M. Sepcic, K. A. Bensley, A. M. Lehman-Chong, J. F. Stanzione, S. E. Lofland, "Toward a practical method for measuring glass transition in polymers with low-frequency Raman spectroscopy" *Appl. Phys. Lett.* 122(26), 264101 (June 2023). <https://doi.org/10.1063/5.0155631>

J. Schossig, A. Gandotra, K. Arizapana, D. Weber, M. Wildy, W. Wei, K. Xu, L. Yu, R. V. Chimenti, I. Mantawy, D. Hyun, W. Chen, C. Zhang, P. Lu, "CO₂ to Value-Added Chemicals: Synthesis and Performance of Mono- and Bimetallic Nickel–Cobalt Nanofiber Catalysts," *Catalysts* 2023, 13(6), 1017 (June 2023). <https://doi.org/10.3390/catal13061017>

R.V. Chimenti, J. Daley, J. Sack, J. Necsutu, N. Whiting, "Reconversion of Parahydrogen Gas in Surfactant-Coated Glass NMR Tube," *Molecules*, 28(5), 2329, (March 2023). <https://doi.org/10.3390/molecules28052329>

R. J. Thomas, K. Bakeev, M. Claybourn, R. V. Chimenti, "The Use of Raman Spectroscopy in the Field of Cancer Diagnostics," *Spectroscopy Magazine* 28(9) 2-8 (September 2013).

R. V. Chimenti, M. P. Dierking, P. E. Powers, J. W. Haus, E. S. Bailey, "Experimental Verification of Sparse Frequency Linearly Frequency Modulated Ladar Signals Modeling," *Opt. Express* 18, 15400-15407 (July 2010). <https://doi.org/10.1364/OE.18.015400>

R. V. Chimenti, M. P. Dierking, P. E. Powers, J. W. Haus, "Sparse Frequency LFM Ladar Signals," *Opt. Express* 17, 8302-8309 (May 2009). <https://doi.org/10.1364/OE.17.008302>

PRESENTATIONS

A. M. Lehman-Chong, R. V. Chimenti, J. Tu, S. E. Lofland, J. F. Stanzione, "Kinetic Study of Rheology-Modified Interpenetrating Polymer Network (IPN) Resins Using Ultra-Low Frequency Raman," SCIX Conference, October 2023, Sparks, NV. (invited)

R. V. Chimenti, J. T. Carriere, D. M. D'Ascoli, J. D. Engelhardt, A. M. Sepcic, K. A. Bensley, A. M. Lehman-Chong, J. F. Stanzione, S. E. Lofland, "Measuring Glass Transition Kinetics of Polymers with Low-Frequency Raman," SCIX Conference, October 2023, Sparks, NV. *(contributed)*

R. V. Chimenti, A. M. Lehman-Chong, J. T. Carriere, J. F. Stanzione, S. E. Lofland, "Use of Ultra-Low-Frequency Raman Spectroscopy to Monitor Kinetic Processes of Polymers," ACS Fall Meeting, August 2023, San Francisco, CA. *(invited)*

R. V. Chimenti, A. M. Lehman-Chong, J. Tu, J. T. Carriere, A. M. Sepcic, S. E. Lofland, J. F. Stanzione, "Curing Kinetics of Methacrylate and Dual-Cure Interpenetrating Polymer Network (IPN) Resins for UV-Curable Additive Manufacturing via In-Situ Raman Spectroscopy," APS March Meeting, March 2023, Las Vegas, NV. *(contributed)*

R. V. Chimenti, A. M. Lehman-Chong, J. Tu, J. T. Carriere, A. M. Sepcic, J. F. Stanzione, S. E. Lofland, "Ultra-Low-Frequency Longitudinal Acoustic Phonon Modes Provide Insight into Polymerization Kinetics of Epoxy and Dual-Cure Resins," APS March Meeting, March 2023, Las Vegas, NV. *(contributed)*

R. V. Chimenti "Watching Glue Dry: How Photon-Phonon Interactions can be Exploited for in-situ Monitoring of Polymerization and Glass Transition in Amorphous Materials," Material Science & Engineering Seminar Series, Rutgers Univ., February 2023 Piscataway, NJ. *(invited)*

R. V. Chimenti, A. M. Lehman-Chong, J. Tu, J. F. Stanzione, S. E. Lofland, J. T. Carriere, "Monitoring Structural and Chemical Curing Kinetics of Epoxy, Methacrylate, and Dual-Cure Resins for Additive Manufacturing via In-Situ Raman Spectroscopy," SCIX Conference, October 2022, Covington, KY. *(contributed)*

R. V. Chimenti, J. Daley, J. Sack, L. Viola, D. Caruso, J. Necsutu, N. Whiting, "Reconversion of Parahydrogen Gas in Surfactant-Coated Glass NMR Tubes," Experimental NMR Conference (ENC), April 2022, Orlando, FL. *(contributed)*

J. Sack, L. Viola, D. Caruso, J. Necsutu, J. Daley, R. V. Chimenti, N. Whiting, "Relaxation of Parahydrogen in Surfactant-Coated Glass NMR Tubes," The Parahydrogen Enhanced Resonance Meeting, June 2021, Virtual. *(contributed)*

R. V. Chimenti "Advancing Portable Raman Devices with Dual Wavelength Lasers," Pittcon Conference February 2018, Orlando, FL. *(invited)*

R. V. Chimenti "How Laser Design Impacts the Past, Present, and Future of Raman Spectroscopy," Biophotonics Seminar Series, Vanderbilt Univ., February 2018 Nashville, TN. *(invited)*

R. V. Chimenti "Enabling portable Raman devices with dual wavelength lasers," SPIE BIOS Conference January 2018, San Francisco, CA. *(invited)*

R. V. Chimenti "Dual Wavelength Applications in Portable Raman Spectroscopy" SCIX Conference, October 2017, Reno, NV. *(invited)*

R. V. Chimenti "High Throughput Integrated Raman Probe with Elongated Core Collection Fiber-optic," SCIX Conference, September 2015, Providence, RI. *(contributed)*

R. V. Chimenti, E. S. Bailey, P. E. Powers, J. W. Haus, M. P. Dierking, "A Review of Sparse Frequency Linearly Frequency Modulated (SF-LFM) Laser Radar Signal Modeling with Preliminary Experimental Results," 15th Coherent Laser Radar Conference, June 2009, Toulouse, France. *(contributed)*

R. V. Chimenti, M. P. Dierking, P. E. Powers, and J. W. Haus, "Multiple Chirp Sparse Frequency LFM Ladar Signals," Proceedings of SPIE 7323, 73230N, April 2009, Orlando, FL. *(contributed)*

R. V. Chimenti, S. Lynch, H. C. Pues, S. Jurewicz, E. Knoesel, S. Lofland, "Crystal Symmetry of BiCrO₃ using Second Harmonic Generation," 17th Annual Sigma Xi Symposium & 60th Annual Eastern Colleges Science Conference, April 2006. *(contributed)*

SELECTED OTHER PUBLICATIONS

R.V. Chimenti, "Are discrete-wavelength QCL arrays the future of mid-IR spectroscopy?," *Laser Focus World / BioOptics World* 58(2) (February 2022).

R.V. Chimenti, "Current trends in photoacoustic imaging," *Laser Focus World / BioOptics World* 58(1) (January 2022).

R.V. Chimenti, "Researchers demonstrate new approaches to IR microscopy," *Laser Focus World / BioOptics World* 57(12) (December 2021).

R.V. Chimenti, "Photonic technology is the bedrock of additive manufacturing," *Laser Focus World / BioOptics World* 57(9) (September 2021).

R. V. Chimenti, "Machine learning: The future of healthcare," *Laser Focus World / BioOptics World* 57(8) (August 2021).

R. V. Chimenti, "QCL technology poised to transform IR spectroscopy, microscopy," *Laser Focus World* 57(7): 43-46 (July 2021).

R. V. Chimenti, "Advances in environmental sensing help improve water quality," *Laser Focus World* 57(7): 29-32 (July 2021).

R. V. Chimenti, "3D-printed spectrometer could be integrated directly into distal end of endoscope," *Laser Focus World / BioOptics World* 57(5): 50-53 (May 2021).

R. V. Chimenti, "Is a SHS renaissance on the horizon?" *Laser Focus World / BioOptics World* 57(3): 53-54 (March 2021).

R. V. Chimenti, "Optics and photonics enable the fight against COVID-19," *Laser Focus World / BioOptics World* 57(1): 43-47 (January 2021).

R. V. Chimenti, "Stabilized diodes enable improved laser speckle contrast imaging," *Laser Focus World / BioOptics World* 56(11): 35-37 (November 2020).

R. V. Chimenti, "Spectroscopy uncovers the hidden in art and archaeology," *Laser Focus World* 56(10): 35-39 (October 2020).

R. V. Chimenti, "Confocal filtering enables submicron detection with flow cytometry," *Laser Focus World / BioOptics World* 56(9): 39-41 (September 2020).

R. V. Chimenti, "Laser-based point-of-care testing and biomodulation therapy have a bright future," *Laser Focus World / BioOptics World* 56(8): 30-32 (August 2020).

R. V. Chimenti, "The New Technologies Shaping Near-Infrared Spectroscopy," *Photonics Spectra* 54(2): 56-59 (February 2020)

R. V. Chimenti, "Excitation Source Parameters Dictate Raman Spectroscopy Outcomes," *Laser Focus World* 53(1): 76-79 (January 2017).

R. V. Chimenti, J. Elliott, R. A. Bux, "Raman Spectroscopy Could Facilitate Deployment of Amantadine-Based Cancer Screening Technology—Enabling the Transition from Labs to Villages," *American Pharmaceutical Review* 18(1): 10-14 (January/February 2015).

P. Zhou, K.A. Bakeev, R.V. Chimenti "Identification and Quantification of Methanol in Contaminated Spirits," *Spectroscopy Magazine: The Application Notebook (supplement)* 28(9) (September 2013).

K. Bakeev and R. V. Chimenti, "Pros and Cons of using Correlation Versus Multivariate Algorithms for Material Identification via Handheld Spectroscopy," *European Pharmaceutical Review* (July 2013).

R. V. Chimenti, R. J. Thomas, "Miniature Spectrometer Designs Open New Applications Potential," *Laser Focus World* 49(5): 34-44 (May 2013).

AWARDED PATENT

S. L. Rudder, J. B. Gannon, R. V. Chimenti, B. L. Carlin, and J. C. Connolly, "Dual wavelength Raman probe with spectral concatenation of data." *U.S. Patent No. 10,359,313*. (Issued July 23, 2019).

PATENT APPLICATIONS

R.V. Chimenti, "Methods of Monitoring Kinetic Processes in Amorphous Materials." *US Patent App. 63/466,894*

R.V. Chimenti, S.L. Rudder, H.R. Guenther, J.B. Gannon, J.C. Connolly, "Compact Raman Probe Integrated with Wavelength Stabilized Diode Laser Source." *US Patent App. 14/614,862*

R. V. Chimenti, M. P. Dierking, P. E. Powers, J. W. Haus, "Method for High Resolution Coherent Laser Radar Using Sparse Frequency Waveforms" Application No. 61/322,475

PROFESSIONAL AFFILIATIONS AND COMMITTEES

PhotonicsNJ Board of Trustees (*Current Member*)

PhotonicsNJ Acting Treasurer (*Current*)

FACSS Careers Chair (*2022-2023*)

SCIX Conference Low-frequency Raman Session Chair (*2023-Present*)

American Physical Society (APS) (*Current Member*)

Society for Applied Spectroscopy (SAS) (*Current Member*)

Society of Photo-Optical Instrumentation Engineers (SPIE) (*Current Member*)

Coblentz Society (*Current Member*)

Optica (formerly OSA) (*Current Member*)

American Pharmaceutical Review Editorial Advisory Board (*Current Member - Inactive*)

SCIX Conference 2021 General Chair (*2021*)

SCIX Conference Workshops Chair (*2018 – 2019*)

SCIX Conference Workshops Co-Chair (*2017*)

Strategies in Biophotonics Advisory Board Member (*2014-2015*)