

Christopher D. Ball, Ph.D.

Research Scientist

ElectroScience Laboratory, The Ohio State University

1330 Kinnear Road, Columbus, OH 43212

(614) 292-5752, ball.51@osu.edu

Professional Preparation

Harvard-Smithsonian Center for Astrophysics	Astrophysics	Postdoc, 1998-2000
The Ohio State University	Physics	Ph.D., 1998
The Ohio State University	Physics	M.S., 1994
Harvard University	Physics	A.B., 1992

Professional Appointments

The Ohio State University

Research Scientist, ElectroScience Laboratory 2016-present

Interim Director, ElectroScience Laboratory 2022-present

Optimal Scientific LLC

President 2015-present

Battelle Memorial Institute

Research Leader 2009-2015

Senior Research Scientist 2004-2008

Principal Research Scientist 2000-2004

Selected Publications

Zhu, K., Aykas, D.P., Anderson, N., Ball, C., Plans, M., Rodriguez-Saona, L., “Nutritional quality screening of oat groats by vibrational spectroscopy using field-portable instruments,” *J. Cereal Sci.*, Volume 107, 103520 (2022). <https://doi.org/10.1016/j.jcs.2022.103520>

Yao, S., Ball, C., Miyagusuku-Cruzado, G., Giusti, M.M., Aykas, D.P., Rodriguez-Saona, L.E., “A novel handheld FT-NIR spectroscopic approach for real-time screening of major cannabinoids content in hemp”, *Talanta*, Volume 247, 2022, 123559, <https://doi.org/10.1016/j.talanta.2022.123559>.

Budhu, J., Pfiester, N., Choi, K.K., Young, S., Ball, C., Krishna, S., Grbic, A. “Dielectric resonator antenna coupled antimonide-based detectors (DRACAD) for the infrared,” *IEEE Transactions on Antennas and Propagation*, vol. 69, pp. 6762-6771, 2021. doi: 10.1109/TAP.2021.3069522

Ball, C.D., Tapia-Tamayo, I.J., Paolieri, M., O’Brien, A.J., French, M., Johnson, J.T., Grogan, P., “Integrated constellation analysis tools to support New Observing Strategy mission design,” *Proc. SPIE 11832, CubeSats and SmallSats for Remote Sensing V*, 1183208 (2021). <https://doi.org/10.1117/12.2594791>

Aykas, D.P., Ball, C., Sia, A., Zhu, K., Shotts, M-L, Schmenk, A., Rodriguez-Saona, L., “In-situ screening of soybean quality with a novel near-infrared sensor,” *Sensors* 20, 6283 (2020). doi:10.3390/s20216283

Pfiester, N.A., Budhu, J., Lee, S.H., Rogers, V., Choi, K.-K., Ball, C., Young, S., Grbic, A., Krishna, S., “Modeling and extraction of optical characteristics of InAs/GaSb strained layer superlattice,” *Proc. SPIE 11407, Infrared Technology and Applications XLVI*, 114070M (18 May 2020).

Joel T. Johnson, Chris Ball, et al., “Real-time detection and filtering of Radio Frequency Interference on-board a spaceborne microwave radiometer: the CubeRRT mission,” *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, vol. 13, pp. 1610-1624, 2020, doi: 10.1109/JSTARS.2020.2978016.

Weatherall, J.C., Barber, J., Brauer, C.S., Johnson, T.J., Ball, C.D., Smith, B.T., Cox, R., Steinke, R., McDaniel, P., Wasserzug, L. (2012) “Adapting Raman Spectra from Laboratory Spectrometers to Portable Detection Libraries.” *Applied Spectroscopy* 67(2): 149-157.

Neese, Christopher F., Medvedev, Ivan R., Plummer, Grant M., Frank, Aaron J., Ball, Christopher D., and De Lucia, Frank C. (2012). “A Compact Submillimeter/Terahertz Gas Sensor with Absolute Specificity and ppt Sensitivity.” *IEEE Sensors* 12(8): 2565-2574.

Synergistic Activities

Interim Director of the ElectroScience Laboratory, 2022-present. Budget oversight of operations, strategic, development, and earnings funds; direct management of research support staff; representation at College and University meetings and events; service on College- and University-level committees; outreach and interface with government and industry sponsors.

Co-PI for Handheld Spectroscopic Sensor, 2017-present. Development and commercialization of compact infrared sensor hardware and data analysis software to detect chemical constituents of various food and agricultural products.

PI for X-ray Communication System, 2020-present. Development of an X-ray communication system for future spaceborne missions based on a miniaturized X-ray source and amplitude modulation.

Co-I on Bandstructure Engineered Type-II Superlattice Antimonide Avalanche Photodiodes (BETA-APD) for Space Lidar Instruments, 2022-2024. Collaboration with Prof. Sanjay Krishna (ECE) to develop novel infrared detector technology to support spaceborne remote sensing.

Project Manager for the NASA CubeRRT Mission, 2016-2020. Development of space-ready microwave radiometer, integration onto 6U CubeSat platform, extensive environmental testing, on-orbit operations.

Project Management Professional (PMP) certification, 2011-present.