

DAFTAR PUSTAKA

- Abramowitz, M., & Stegun, I. A. (1966). Handbook of Mathematical Functions. *The Mathematical Gazette*, 50(373), 358. <https://doi.org/10.2307/3614753>
- Bartlome, R., Kaučikas, M., & Sigrist, M. W. (2009). Modulated resonant versus pulsed resonant photoacoustics in trace gas detection. *Applied Physics B: Lasers and Optics*, 96(2–3), 561–566. <https://doi.org/10.1007/s00340-009-3572-2>
- Baumann, B., Wolff, M., Kost, B., & Groninga, H. (2007). Finite element calculation of photoacoustic signals. *Applied Optics*, 46(7), 1120. <https://doi.org/10.1364/AO.46.001120>
- Bernegger, S., & Sigrist, M. W. (1990). CO-Laser Photoacoustic Spectroscopy of Gases and Vapour for Trace Gas Analysis. *Infrared Phys.*, 30(5), 375–429. [https://doi.org/10.1016/0020-0891\(90\)90001-C](https://doi.org/10.1016/0020-0891(90)90001-C)
- Besson, J. P., & Thévenaz, L. (2006). Photoacoustic spectroscopy for multi-gas sensing using near infrared lasers. *Laboratoire de nanophotonique et métrologie, Ph.D.(Thèse No. 3670 (2006))*, 1–189. <https://doi.org/10.5075/epfl-thesis-3670>
- Bijnen, F. G. C., Reuss, J., & Harren, F. J. M. (1996). Geometrical optimization of a longitudinal resonant photoacoustic cell for sensitive and fast trace gas detection. *Review of Scientific Instruments*, 67(8), 2914–2923. <https://doi.org/10.1063/1.1147072>
- Boschetti, A., Bassi, D., Iacob, E., Iannotta, S., Ricci, L., & Scotoni, M. (2002). Resonant photoacoustic simultaneous detection of methane and ethylene by means of a 1.63- μm diode laser. *Applied Physics B: Lasers and Optics*, 74(3), 273–278. <https://doi.org/10.1007/s003400200790>
- Bramantyo, N., (2006). Desain Resonator Hemlholtz Ganda dengan Menggunakan Matlab, Skripsi, UNS.
- Breguet, J., J. P. Pellaux, & N. Gisina. (1995). Photoacoustic detection of trace gases with an optical microphone. *Sensors & Actuators: A. Physical*, 48, 29–35.
- Bruneau, M., Garing, C., & Leblond, H. (1985). Quality factor and boundary-layer of lower order modes in acoustic cavities. *J. Physique* 46, 46, 1079–1085.
- Cai, Y., Arsad, N., Li, M., & Wang, Y. (2013). Buffer structure optimization of the photoacoustic cell for trace gas detection. *Optoelectronics Letters*, 9(3), 233–237. <https://doi.org/10.1007/s11801-013-3017-3>
- Calasso, I. G., Funtov, V., & Sigrist, M. W. (1997). Analysis of isotopic CO₂ mixtures by laser photoacoustic spectroscopy. *Applied Optics*, 36(15), 3212. <https://doi.org/10.1364/AO.36.003212>
- Chaigne, A., & Kergomard, J. (2016). *Acoustics of Musical Instruments*. Springer Verlag New York.
- Chipperfield, A. J., & Fleming, P. J. (1995). MATLAB Genetic algorithm toolbox.

IEE Colloquium (Digest), (14).

Claspy, P. C., Dewey, C. F., Gelbwachs, J. A., Kelley, P. L., Kreuzer, L. B., Robin, M. B., ... Witriol, N. M. (1977). *Optoacoustic Spectroscopy and Detection*.

da Silva, G. C. C., & Nunes, M. A. de A. (2017). *Transmission loss optimization using genetic algorithm in Helmholtz resonator under space constraints*. 040003(2016), 040003. <https://doi.org/10.1121/2.0000333>

Davies, S., Spanel, P., & Smith, D. (1997). Quantitative analysis of ammonia on the breath of patients in end-stage renal failure. *Kidney International*, 52(1), 223–228. <https://doi.org/10.1038/ki.1997.324>

De Zwart, L. L., Meerman, J. H. N., Commandeur, J. N. M., & Vermeulen, N. P. E. (1998). Biomarkers of Free Radical Damage Applications in Experimental Animals and In Humans. *Free Radical Biology and Medicine*, 26(2), 202–226.

Dewey, C. F. (1977). Design of Optoacoustic Systems. In *Optoacoustic Spectroscopy and Detection*. <https://doi.org/10.1016/b978-0-12-544150-6.50008-8>

Dhanaseela, M. P. P., & Tingsanchali, T. (2008). Pipe Diameter Optimization using Genetic Algorithm- A Case Study. *Engineer: Journal of the Institution of Engineers, Sri Lanka*, 41(4), 32. <https://doi.org/10.4038/engineer.v41i4.7095>

Duggen, L., Albu, M., Willatzen, M., & Rubahn, H.-G. (2011). Modeling frequency response of photoacoustic cells using FEM for determination of N-heptane contamination in air: Experimental validation. *IMETI 2011 - 4th International Multi-Conference on Engineering and Technological Innovation, Proceedings*, 2(2), 108–110.

Duggen, L., Frese, R., & Willatzen, M. (2010). FEM analysis of cylindrical resonant photoacoustic cells. *Journal of Physics: Conference Series*, 214. <https://doi.org/10.1088/1742-6596/214/1/012036>

Duggen, L., Lopes, N., Willatzen, M., & Rubahn, H. G. (2011). Finite Element Simulation of Photoacoustic Pressure in a Resonant Photoacoustic Cell Using Lossy. In *Int J Thermophys*. <https://doi.org/10.1007/s10765-010-0828-3>

Dumitras, D. C., A.Puiu, & Cernat, R. (2004). Laser photoacoustic spectroscopy: A powerful tool for measurement of trace gases of biological interest at sub-ppb level. *Mol. Cryst. Liq. Cryst.*, 418, 217=[945]–227=[955],. <https://doi.org/10.1080/15421400490479307>

Dumitras, D. C., Dutu, D. C., Matei, C., Magureanu, A. M., Petrus, M., & Popa, C. (2007). Laser photoacoustic spectroscopy: Principles, instrumentation, and characterization. *Journal of Optoelectronics and Advanced Materials*, 9(12), 3655–3701.

Dumitras, Dan C, Bratu, A. M., & Popa, C. (2012). *CO2 Laser Photoacoustic Spectroscopy: II. Instrumentation and Applications*.

El-Busaidy, S. A. S., Baumann, B., Wolff, M., & Duggen, L. (2018). Photoacoustic

- Modeling Using Amplitude Mode Expansion Method in a Multi-scale T-cell Resonator. *comsol conference 2018 Lausanne, Switzerland, 14*(2014), 2018.
- El-Busaidy, S. A. S., Baumann, B., Wolff, M., & Duggen, L. (2020). Modelling of open photoacoustic resonators. *Photoacoustics*, 18(December 2019). <https://doi.org/10.1016/j.pacs.2020.100161>
- El-Masri, S. (2004). Analysis of discontinuities in rectangular ducts and higher order mode excitations using TLM and FEM methods. *International Journal of Numerical Modelling: Electronic Networks, Devices and Fields*, 17(4), 353–364. <https://doi.org/10.1002/jnm.532>
- Evans, D. V., & Fernyhough, M. (1995). Edge waves along periodic coastlines. Part 2. *Journal of Fluid Mechanics*, 297, 307–325. <https://doi.org/10.1017/S0022112095003119>
- Farooqui, M., Aurégan, Y., & Pagneux, V. (2018). *Acoustic Propagation in lined ducts with varying cross-section using a Mild-Slope approximation*. 0(3), 1–5. Diambil dari <http://arxiv.org/abs/1809.03277>
- Filippi, P., Habault, D., Lefebvre, J. P., Bergassoli, A., & Raspet, R. (2000). Acoustics: Basic Physics, Theory and Methods. In *The Journal of the Acoustical Society of America* (Vol. 108). <https://doi.org/10.1121/1.429574>
- Gerlach, R., & Amer, N. M. (1980). Brewster window and windowless resonant spectrophones for intracavity operation. *Applied Physics*, 23(3), 319–326. <https://doi.org/10.1007/BF00914918>
- Gondal, M. A., Dastageer, A., & Shwehdi, M. H. (2004). Photoacoustic spectrometry for trace gas analysis and leak detection using different cell geometries. *Talanta*, 62(1), 131–141. [https://doi.org/10.1016/S0039-9140\(03\)00418-1](https://doi.org/10.1016/S0039-9140(03)00418-1)
- Gradshteyn, I. S., Ryzhik, I. M., Jeffrey, A., & Scripta Technica, I. (2007). Table of Integrals, Series, and Products. In *Mathematics of Computation*. <https://doi.org/10.2307/2153347>
- Groot, T. T., 2002, *Trace Gas Exchange by Rice, Soil, and Pears*, University of Nijmegen, Nijmegen.
- Hao, L. Y., Ren, Z., Shi, Q., Wu, J. L., Zheng, Y., Zheng, J. J., & Zhu, Q. S. (2002). A new cylindrical photoacoustic cell with improved performance. *Review of Scientific Instruments*, 73(2 D), 404. <https://doi.org/10.1063/1.1427306>
- Harren, F. J. M., Bijnen, F. G. C., Reuss, J., Voesenek, L. A. J. C., & Blom, C. W. P. M. (1990). Sensitive Intracavity Photoacoustic Measurements with a CO₂ Waveguide Laser. *Applied Physics B: Lasers and Optics*, 50, 137–144. <https://doi.org/10.1063/1.3033202>
- Harren, F. J.M., Berkelmans, R., Kuiper, K., Te Lintel Hekkert, S., Scheepers, P., Dekhuijzen, R., ... Parker, D. H. (1999). On-line laser photoacoustic detection of ethene in exhaled air as biomarker of ultraviolet radiation damage of the human skin. *Applied Physics Letters*, 74(12), 1761–1763.

<https://doi.org/10.1063/1.123680>

Harren, Frans J M, Mandon, J., & Cristescu, S. M. (2012). *Photoacoustic Spectroscopy in Trace Gas Monitoring*.
<https://doi.org/10.1002/9780470027318.a0718.pub2>

Haupt, R. L., & Haupt, S. E. (2004). Practical genetic algorithms. In *Wiley-Interscience Publication*. https://doi.org/10.1007/11543138_2

Hollas, J. M. (2004). *Modern spectroscopy*. John Wiley & Sons.

Homentcovschi, D., & Bercia, R. (2018). *infinite flange Re-expansion method for generalized radiation impedance of a circular aperture in an infinite flange*. 32.
<https://doi.org/10.1121/1.5044745>

Homentcovschi, D., & Miles, R. N. (2010). A re-expansion method for determining the acoustical impedance and the scattering matrix for the waveguide discontinuity problem. *The Journal of the Acoustical Society of America*, 128(2), 628–638. <https://doi.org/10.1121/1.3455836>

Homentcovschi, D., & Miles, R. N. (2012). Re-expansion method for circular waveguide discontinuities: Application to concentric expansion chambers. *The Journal of the Acoustical Society of America*, 131(2), 1158–1171. <https://doi.org/10.1121/1.3675553>

Hussain, M. A., & Ahmed, S. S. (2018). *Sulfur Hexafluoride (SF₆) Trace Gas Sensing using Modulated CO₂ Laser Beam*. 17, 9–15.

Jeffrey, A., & Romer, R. H. (1996). Handbook of Mathematical Formulas and Integrals. *American Journal of Physics*. <https://doi.org/10.1119/1.18427>

Jeffrey, A., & Zwillinger, D. (2007). Table of integrals, series, and products: Seventh edition. In *Table of Integrals, Series, and Products: Seventh Edition*.

Kalapos, M. P. (2003). On the mammalian acetone metabolism: From chemistry to clinical implications. *Biochimica et Biophysica Acta - General Subjects*, 1621(2), 122–139. [https://doi.org/10.1016/S0304-4165\(03\)00051-5](https://doi.org/10.1016/S0304-4165(03)00051-5)

Kanoria, M. (2001). Water wave scattering by thick rectangular slotted barriers. *Applied Ocean Research*, 23(5), 285–298. [https://doi.org/10.1016/S0141-1187\(01\)00018-9](https://doi.org/10.1016/S0141-1187(01)00018-9)

Karal, F. C. (1953). The Analogous Acoustical Impedance for Discontinuities and Constrictions of Circular Cross Section. *The Journal of The Acoustical Society of America*, 25(2), 233–237.

Karbach, A., & Hess, P. (1985). High precision acoustic spectroscopy by laser excitation of resonator modes. *The Journal of Chemical Physics*, 83(3), 1075–1084. <https://doi.org/10.1063/1.449470>

Karbach, A., & Hess, P. (1986). Photoacoustic signal in a cylindrical resonator: Theory and laser experiments for CH₄ and C₂H₆. *The Journal of Chemical Physics*, 84(6), 2945–2952. <https://doi.org/10.1063/1.450809>

Kelly, C., Leis, J., & Buttsworth, D. (2011). *Development of a Photo-Acoustic*

Trace Gas Sensor. (139), 1–8.

- Kemp, J., Lopez-Carromero, A., & Campbell, M. (2017). Pressure fields in the vicinity of brass musical instrument bells measured using a two-dimensional grid array and comparison with multimodal models. *24th International Congress on Sound and Vibration, ICSV 2017*.
- Kergomard J. (1991). Calculation of discontinuities in waveguides using mode-matching method: an alternative to the scattering matrix approach. *J. Acoustique*, (January 1991).
- Kergomard, J., & Garcia, A. (1987). Simple discontinuities in acoustic waveguides at low frequencies: Critical analysis and formulae. *Journal of Sound and Vibration*, 114(3), 465–479. [https://doi.org/10.1016/S0022-460X\(87\)80017-2](https://doi.org/10.1016/S0022-460X(87)80017-2)
- Kergomard, J., Garcia, A., Tagui, G., & Dalmont, J. P. (1989). Analysis of higher order mode effects in an expansion chamber using modal theory and equivalent electrical circuits. *Journal of Sound and Vibration*, 129(3), 457–475. [https://doi.org/10.1016/0022-460X\(89\)90435-5](https://doi.org/10.1016/0022-460X(89)90435-5)
- Kim, Y. H. (2010). Sound Propagation: An Impedance Based Approach. In *John Wiley & Sons*. <https://doi.org/10.1016/B978-0-12-811240-3.00002-3>
- Kinsler, L. E., Frey, A. R., Coppens, A. B., & Sanders, J. V. (2000). Fundamental Acoustic. In *John Wiley & Sons*.
- Kirby, R., & Lawrie, J. B. (2005). A point collocation approach to modelling large dissipative silencers. *Journal of Sound and Vibration*, 286(1–2), 313–339. <https://doi.org/10.1016/j.jsv.2004.10.016>
- Koch, K. P., & Lahmann, W. (1978). Optoacoustic detection of sulphur dioxide below the parts per billion level. *Applied Physics Letters*, 32(5), 289–291. <https://doi.org/10.1063/1.90023>
- Kost, B., Baumann, B., Germer, M., & Wolff, M. (2009). Shape optimization of photoacoustic resonators. *WIT Transactions on the Built Environment*, 106(May), 45–54. <https://doi.org/10.2495/OP090051>
- Kundra, A., Jain, A., Banga, A., Bajaj, G., & Kar, P. (2005). Evaluation of plasma ammonia levels in patients with acute liver failure and chronic liver disease and its correlation with the severity of hepatic encephalopathy and clinical features of raised intracranial tension. *Clinical Biochemistry*, 38(8), 696–699. <https://doi.org/10.1016/j.clinbiochem.2005.04.013>
- Kusumadewi, Sri dan Hari Purnomo. (2013). *Penyelesaian Masalah Optimasi dengan Teknik-teknik Heuristik*. Graha Ilmu
- Kuttruff, H. (2006). *Acoustic An Introduction*. Taylor & Francis.
- Li, J., Chen, W., & Yu, B. (2011). Recent progress on infrared photoacoustic spectroscopy techniques. *Applied Spectroscopy Reviews*, 46(6), 440–471. <https://doi.org/10.1080/05704928.2011.570835>
- Li, J., Gao, X., Fang, L., Zhang, W., & Cha, H. (2007). Resonant photoacoustic

- detection of trace gas with DFB diode laser. *Optics and Laser Technology*, 39(6), 1144–1149. <https://doi.org/10.1016/j.optlastec.2006.09.007>
- Liu, B., Liu, J., Wei, W., Shen, H., & Wei, Z. (2018). Suppression of low frequency sound transmission in fluid-filled pipe systems through installation of an anechoic node array. *AIP Advances*, 8(11). <https://doi.org/10.1063/1.5051603>
- M. Nagele, M. W. Sigrist, D. H. (2001). *Mobile photoacoustic trace-gas monitoring using high power quantum- cascade lasers as pump sources operated near room temperature*.
- McIver, M., Linton, C. M., & Zhang, J. (2002). The branch structure of embedded trapped modes in two-dimensional waveguides. *Quarterly Journal of Mechanics and Applied Mathematics*, 55(2), 313–326. <https://doi.org/10.1093/qjmam/55.2.313>
- Miklós, A., Hess, P., & Bozóki, Z. (2001). Application of acoustic resonators in photoacoustic trace gas analysis and metrology. *Review of Scientific Instruments*, 72(4), 1937–1955. <https://doi.org/10.1063/1.1353198>
- Miklós, A., Schäfer, S., & Hess, P. (1999). Photoacoustic Spectroscopy, Theory. In *Encyclopedia of Spectroscopy and Spectrometry*. <https://doi.org/10.1006/rwsp.2000.0234>
- Miles, J. W. (1946a). The Analysis of Plane Discontinuities in Cylindrical Tubes. Part I. *The Journal of the acoustical society of america*, 17(3), 259–271.
- Miles, J. W. (1946b). The Analysis of Plane Discontinuities in Cylindrical Tubes. Part II. *The Journal of the Acoustical Society of America*, 17(3), 271–284.
- Mitrayana, M. A. J. Wasono, W. Rochmah. (2010). Kajian Deteksi C_2H_4 , C_3H_6O , dan NH_3 dari Gas Hembus Pernafasan Sebagai *Bio-Marker* Penyakit-Dalam dengan Metode Spektroskopi Fotoakustik Laser, Prosiding Seminar Nasional Penelitian, Pendidikan dan Penerapan MIPA, Fakultas MIPA, Universitas Negeri Yogyakarta
- Mitrayana, M. A. J. Wasono, W. Rochmah. (2008). Rancang Bangun Spektrometer Fotoakustik dan Spektrometer Modulasi Panjang Gelombang Laser; Kajian Deteksi Gas Bio-Marker C_2H_4 , C_3H_6O , NH_3 , NO_2 dan NO dalam Bidang Kedokteran, Ph.D., UGM
- Mitrayana, Apriyanto, D. K., & Satriawan, M. (2020). CO₂ Laser photoacoustic spectrometer for measuring acetone in the breath of lung cancer patients. *Biosensors*, 10(6). <https://doi.org/10.3390/BIOS10060055>
- Mitrayana, Nikita, J. G., Wasono, M. A. J., & Satriawan, M. (2020). CO₂ laser photoacoustic spectrometer for measuring ethylene, acetone, and ammonia in the breath of patients with renal disease. *Sensing and Bio-Sensing Research*, 30, 100387. <https://doi.org/10.1016/J.SBSR.2020.100387>
- Mitrayana, Wasono, M. A. J., Ikhsan, M. R., & Harren, F. J. M. (2010). *Deteksi Dini Penyakit Dalam Dengan Metode Non- Invasive Spektroskopi Fotoakustik Laser*. Prosiding Seminar Nasional VI SDM Teknologi Nuklir Yogyakarta

- Mitrayana, Wasono, M. A. J., & Muslim. (2002). Spektrometer fotoakustik berkepekaan tinggi. *Prosiding Pertemuan dan Presentasi ilmiah Penelitian Dasar Ilmu Pengetahuan dan Teknologi Nuklir*, 34–38.
- Mitrayana, Wasono, M. A. J. Ikhsan, R., (2017). Spektroskopi Fotoakustik Laser dan Aplikasinya. UGM Press
- Mittra, R., & Lee, S. W. (1971). *Analytical techniques in the theory of guided waves*. New York: MacMilan.
- Morse, P. M., & Ingard, K. U. (1986). Theoretical Acoustics. In *Princeton University Press*. <https://doi.org/10.1119/1.1976432>
- Narasimhan, L. R., Goodman, W., & Patel, C. K. N. (2001). Correlation of breath ammonia with blood urea nitrogen and creatinine during hemodialysis. *Proceedings of the National Academy of Sciences of the United States of America*, 98(8), 4617–4621. <https://doi.org/10.1073/pnas.071057598>
- Narváz, P. C. and Galeano, H. (2006). Genetic algorithms for the optimization of pipeline systems for liquid distribution. *CT&F - Ciencia, Tecnología y Futuro*, 2(5). [https://doi.org/10.1016/S0140-6701\(06\)82066-7](https://doi.org/10.1016/S0140-6701(06)82066-7)
- Nguyen, J. (2017). *A study of the photoacoustic effect in ethylene gas*.
- Nodov, E. (1978). Optimization of resonant cell design for optoacoustic gas spectroscopy (H-type). *Applied Optics*, 17(7), 1110–1119.
- Nordhaus, O., & Pelzl, J. (1981). Frequency Dependence of Resonant Photoacoustic Cells: The Extended Helmholtz Resonator. *Applied Physics*, 25, 221–222.
- Noreland, D. (2003). Impedance boundary conditions for acoustic waves in a duct with a step discontinuity. *Computer methods in applied mechanics and engineering*, 71(2), 197–224.
- Rey, J M, Marinov, D., Vogler, D. E., & Sigrist, M. W. (2005). *Investigation and optimisation of a multipass resonant photoacoustic cell at high absorption levels*. 266, 261–266. <https://doi.org/10.1007/s00340-004-1705-1>
- Rey, J M, & Sigrist, M. W. (2012). *Differential mode excitation photoacoustic spectroscopy: A new photoacoustic detection scheme Differential mode excitation photoacoustic spectroscopy: A new photoacoustic detection scheme*. 063104(2007). <https://doi.org/10.1063/1.2746817>
- Rey, Julien M., & Sigrist, M. W. (2008). Simultaneous dual-frequency excitation of a resonant photoacoustic cell. *Infrared Physics and Technology*, 51(6), 516–519. <https://doi.org/10.1016/j.infrared.2008.04.001>
- Riddle, A., & Selker, M. (2006). *Impedance-optimized photo-acoustic spectroscopy*. 336, 329–336. <https://doi.org/10.1007/s00340-006-2364-1>
- Rosencwaig, A., & Griffiths, P. R. (1981). *Photoacoustics and Photoacoustic Spectroscopy*. *Physics Today*, 34(6), 64–66. <https://doi.org/10.1063/1.2914619>
- Rosencwaig, Allan, & Allen Gersho. (1976). Theory of the photoacoustic effect

- with solids. *Journal of Applied Physics*, 47(1). <https://doi.org/10.1063/1.322296>
- Sadiku, M. N. O. (2018). Computational Electromagnetics with MATLAB®. In *Computational Electromagnetics with MATLAB®*. <https://doi.org/10.1201/9781315151250>
- Sagai, M., & Ichinose, T. (1980). Age-related changes in lipid peroxidation as measured by ethane, ethylene, butane and pentane in respired gases of rats. *Life Sciences*, 27, 731–738. [https://doi.org/10.1016/0024-3205\(80\)90326-4](https://doi.org/10.1016/0024-3205(80)90326-4)
- Saghaififar, H., Tavakoli, M., Taheri, M., & Faculty, A. S. (2009). Design and Simulation of 1D Longitudinal Acoustic Resonator for Laser Photoacoustic Spectroscopy (LPAS) in Trace Gas Detection. *International Conference on Optics and Photonics (ICOP 2009)*.
- Samanta, S. (2014). Genetic Algorithm : An Approach for Optimization (Using MATLAB). *International Journal of Latest Trends in Engineering and Technology (IJLTET)*, 3(3), 261–267. Diambil dari <https://www.ijltet.org/wp-content/uploads/2014/01/431.pdf>
- Sari, R. Y. A., Bambang, A., Mitrayana, & Lelono, D. (2020). Pengaruh Konfigurasi Geometri Buffer Resonator Tipe-H Terhadap Intensitas Bunyi. *Jurnal Sains Dasar*, 9(1), 30–36.
- Schäfer, S., Miklós, A., & Hess, P. (1997). Quantitative signal analysis in pulsed resonant photoacoustics. *Applied Optics*, 36(15), 3202. <https://doi.org/10.1364/AO.36.003202>
- Schilt, S., Besson, J. P., & Thévenaz, L. (2006). Near-infrared laser photoacoustic detection of methane: The impact of molecular relaxation. *Applied Physics B: Lasers and Optics*, 82(2 SPEC. ISS.), 319–329. <https://doi.org/10.1007/s00340-005-2076-y>
- Schilt, Stéphane, Thévenaz, L., Niklès, M., Emmenegger, L., & Hüglin, C. (2004). Ammonia monitoring at trace level using photoacoustic spectroscopy in industrial and environmental applications. *Spectrochimica Acta - Part A: Molecular and Biomolecular Spectroscopy*, 60(14), 3259–3268. <https://doi.org/10.1016/j.saa.2003.11.032>
- Schmid, T. (2006). Photoacoustic spectroscopy for process analysis. *Analytical and Bioanalytical Chemistry*, 384(5), 1071–1086. <https://doi.org/10.1007/s00216-005-3281-6>
- Seiler, N. (2002). Ammonia and Alzheimer's disease. *Neurochemistry International*, 41(2–3), 189–207. [https://doi.org/10.1016/S0197-0186\(02\)00041-4](https://doi.org/10.1016/S0197-0186(02)00041-4)
- Setiono, I. (2018). Gas SF 6 (Sulfur Hexa Fluorida) Sebagai Pemadam Busur Api Pada Pemutus Tenaga (PMT) Di Saluran Transmisi Tegangan Tinggi. *Metana*, 13(1), 1. <https://doi.org/10.14710/metana.v13i1.14676>
- Solokhin, N. (2003). Basic types of discontinuity in circular acoustic wave guide. *The Journal of the Acoustical Society of America*, 114(5), 2626.

<https://doi.org/10.1121/1.1621862>

- Suyanto. (2005). Algoritma Genetika Dalam Matlab. In *Algoritma Genetika dalam Matlab, Andi Offset, Yogyakarta, Indonesia*.
<https://doi.org/http://dx.doi.org/10.1016/j.jphotochem.2015.06.007>
- Tavakoli, M., Tavakoli, A., Taheri, M., & Saghafifar, H. (2010). Design, simulation and structural optimization of a longitudinal acoustic resonator for trace gas detection using laser photoacoustic spectroscopy (LPAS). *Optics and Laser Technology*, 42(5), 828–838. <https://doi.org/10.1016/j.optlastec.2009.12.012>
- Thöny, A., & Sigrist, M. W. (1995). New developments in CO₂-laser photoacoustic monitoring of trace gases. *Infrared Physics and Technology*, 36(2), 585–615. [https://doi.org/10.1016/1350-4495\(94\)00046-N](https://doi.org/10.1016/1350-4495(94)00046-N)
- Timmer, B., Olthuis, W., & Van Den Berg, A. (2005). Ammonia sensors and their applications - A review. *Sensors and Actuators, B: Chemical*, 107(2), 666–677. <https://doi.org/10.1016/j.snb.2004.11.054>
- Wasono, M., & Ikhsan, M. (2014). Mitrayana / Pengukuran Konsentrasi Gas Aseton (C₃H₆O) dari Gas Hembus Relawan Berpotensi Penyakit Diabetes Mellitus dengan Metode Spektroskopi Fotoakustik Laser Pengukuran Konsentrasi Gas Aseton (C₃H₆O) dari Gas Hembus Relawan Berpotensi Penyakit Diabetes Mellitus dengan Metode Spektroskopi Fotoakustik Laser. *Jurnal Fisika Indonesia*, 54.
- Watson, G. N. (1944). *A Treatise on The theory of Bessel Functions* (2 ed.). Cambridge University Press.
- Wilcox, L. C., Stadler, G., Burstedde, C., & Ghattas, O. (2010). A high-order discontinuous Galerkin method for wave propagation through coupled elastic-acoustic media. *Journal of Computational Physics*, 229(24), 9373–9396. <https://doi.org/10.1016/j.jcp.2010.09.008>
- Yehya, F., & Anil K. Chaudhary. (2011). Designing and Modeling of Efficient Resonant Photo Acoustic Sensors for Spectroscopic Applications. *Journal of Modern Physics*, 2, 200–209. <https://doi.org/10.4236/jmp.2011.24028>
- Z Bozoki, A Mohacsi, G Szabo, Zs Bor, M Erdelyi, W Chen, & F K Tittel. (2002). Near-Infrared Diode Laser Based Spectroscopic Detection of Ammonia: A Comparative Study of Photoacoustic and Direct Optical Absorption Methods. *Applied Spectroscopy*, 56(6), 715–719. <https://doi.org/10.1366/000370202760077658>