

# Vacuum References

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## TABLE OF CONTENTS

VACUUM TECHNOLOGY BOOKS .....	2
RESIDUAL GAS ANALYSIS .....	2
APPLICATIONS OF RESIDUAL GAS ANALYZERS TO PROCESS/QUALITY CONTROL.....	4
SPECIALIZED/UNUSUAL APPLICATIONS OF RGAS.....	7
HIGH PRESSURE SAMPLING/ DIFFERENTIAL PUMPING .....	9
QUANTITATIVE MEASUREMENTS WITH RESIDUAL GAS ANALYZERS .....	10
MULTIPLE LINEAR REGRESSION ANALYSIS ALGORITHMS .....	11
VACUUM SYSTEM DESIGN .....	11
VACUUM SYSTEM CONTAMINATION .....	16
VACUUM PUMPS .....	18
TOTAL PRESSURE MEASUREMENT .....	22
BAYARD-ALPERT IONIZATION GAUGES .....	24
PIRANI/THERMOCOUPLE GAUGES .....	27
PRESSURE CALIBRATION/SPINNING ROTOR GAUGE.....	27
TEMPERATURE PROGRAMMED DESORPTION .....	29
MEMBRANE INTRODUCTION MASS SPECTROMETRY (MIMS).....	31
VARIABLE LEAK VALVES.....	31
VACUUM AND PROCESS CONTROL PUBLICATIONS .....	31
VACUUM AND PROCESS CONTROL WEBSITES .....	32

## Vacuum Technology Books

1. J. M. Lafferty , editor, “Foundations of Vacuum Science and Technology”, John Wiley and Sons, Inc., NY, 1998. **Note:** A great book that every vacuum practitioner should own.
2. J. H. Leck, “Total and Partial Pressure Measurement in Vacuum Systems”, Blackie, Glasgow&London, 1989. **Note:** Another classic. Great chapters on gauging.
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4. J. F. O’Hanlon, “A user’s guide to Vacuum Technology”, 2<sup>nd</sup>. Ed. , Wiley, NY, 1989.
5. Gerhard Lewin, “An Elementary Introduction to Vacuum Technique”, AVS Monograph Series, American Institute of Physics, Inc. NY, NY, 1987. **Note:** Great Little reference book.
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7. Walter H. Kohl, “Handbook of Materials and Techniques for Vacuum Devices”, American Vacuum Society Classics, AIP Press, New York, 1995.
8. Phil Danielson, “Building a Vacuum Library”, R&D, March 2002, p. 34
9. Special Issue Journal Of Vacuum Science and Technology A, Second Series, Volume 21, Number 5, Supplement. **Note:** Very useful Vacuum Science and Technology papers by P. A. Redhead, J. P. Hobson, P. A. Redhead , Kimo Welch and H. F. Dylla. Including gauging, pumping and UV technologies.

## Residual Gas Analysis

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3. Anne B. Giordani et. al., “What is Mass Spectrometry?”, 1998, a supplement to the Journal of the American Society of Mass Spectrometry. <http://www.asms.org>.
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7. Dawson, Mass Spectrometry Reviews, 5 (1986) 1-37: "Quadrupole mass analyzers: Performance, design, and some recent applications"
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9. M. G. Rao and C. Dong, J. Vac. Sci. Technol. A 15(3) (1997) 1312, "Evaluation of low cost residual gas analyzers for ultrahigh vacuum applications". **Note:** The RGA models in this paper are: A: MKS PPT 050EM, B: **SRS 100 AMU with electron multiplier**, C: MKS PPT 200EM, D: Balzers QMS 200 M, E: Leybold Inficon High performance Transpector H100M as indicated by the authors.
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11. Changkung Dong and G. Rao Myneni, "Field emitter based extractor gauges and residual gas analyzers", J. Vac. Sci. Technol. A 17(4) (1999) 2026. **Note:** An **SRS RGA** was retrofitted with a Spindt-type field emitter array. Residual gas spectra indicate reduced O, Cl and F electron stimulated desorption.
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17. J. R. Gibson and Stephen Taylor, "Prediction of quadrupole mass filter performance for hyperbolic and circular cross section electrodes", Rapid Communications in Mass Spectrometry, 14 (2000) 1669. **Note:** Improved computational method used to calculate throughput of quadrupole filters with circular and hyperbolic shaped rods.

18. Sharon Lewis, "Simplifying the Residual Gas Analyzer", R&D Magazine, October 2000, p. 21.
19. S. Boumsellek and R. J. Ferran, "Trade Offs in Miniature Quadrupole Designs", J. Am. Soc. Mass Spectrom. 12 (2001) 633. Note: A complete article describing the inherent advantages and limitations of small quadrupole designs.
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23. S. Taylor et.al., "A miniature mass spectrometer for chemical and biological sensing", Proc. SPIE 4036 (2000) 187.
24. B. Wilamowski, et.al., "Enhancing the sensitivity of miniaturized mass spectrometers", IECON'01, 27<sup>th</sup> Annual Conference of the IEEE Industrial Electronics Society, p. 147.
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28. N. Ogiwara, K. Suganuma , Y. Miyo , S. Kobayashi and Y. Saito, "Application of the field emitter array to the vacuum measurements", Applied Surface Science, 146(1999)234-238. Note: A Spindt emitter array is interfaced to an RGA.
29. Bob Langley and Paul LaMarche, "Analyzing Spectrometer Hydrocarbon Spectra", Vac. Technology and Coating, Oct. 2003, p. 22.
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## Applications of Residual Gas Analyzers to Process/Quality Control

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4. Rosenberg, Semiconductor International, October 1995, p. 149: "The Advantages of Continuous On-line RGA Monitoring".
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2. Hadley, Scott W., Don L. Hall, S. Michael Sterner, and Wells Shentwu, 1997, "Hydrocarbon Pay Delineation and Product Characterization with Fluid Inclusions: Examples from East Coast Canada and Western Canada Sedimentary Basin", in Can. Well Log. Soc. in site, Vol. 1, No. 3, p.2-4. **Note:** SRS RGA s used to examine fluid inclusions from oil wells.
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5. Babu Chalamala, Robert Wallace and Bruce Gnade, "Poisoning of Spindt-type molybdenum field emitter arrays by CO<sub>2</sub>", J. Vac. Sci. Technol. B 16(5) (1998) 2866. **Note:** SRS RGA100 is used in the study of the effect of CO<sub>2</sub> on the emission characteristics of Spindt-type molybdenum field emission cathode arrays.
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8. D. R. Ermer, et. al. "Intensity Dependence of Cation Kinetic Energies from 2,5-dihydroxybenzoic acid near the infrared matrix-assisted laser desorption/ionization threshold", *Journal of Mass Spectrometry*, 36 (2001) . Note: An SRS RGA is used in a TOF setup to determine the mechanism of Ionization of MALDI Matrices. Reprint kindly submitted by professor Richard Haglund, Jr.
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7. Kimo Welch, "Calibrating Partial Pressure Gauges. A learning experience", Vacuum Technology and Coating, Nov/Dec 2000, p. 40. Note: A typical Kimo paper. Full of down-to-earth, "don't do what I did", kind of knowledge.
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## Vacuum System Design

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4. **Review of Scientific Instruments.** A monthly journal from the American Institute of Physics ([www.aip.org](http://www.aip.org)) devoted to scientific instruments, apparatus and techniques. Available on-line: <http://ojps.aip.org/rsio/>. Always a very fun journal to read. A must-read for instrument designers and experimental scientists trying to stay up-to-date.
5. **Vacuum Technology & Coating.** A new magazine that started on JAN 2000. For subscriptions contact [www.vactechmag.com](http://www.vactechmag.com). Loaded with vacuum information, high on editorial, low on ads.
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9. **FUTURE FAB International.** Published by Technology Publishing, Ltd. in the U. K., e-mail: [tech@techpub.org](mailto:tech@techpub.org).
10. **AVS Monograph Series.** The American Vacuum Society (AVS, [www.vacuum.org](http://www.vacuum.org)) publishes a whole series of monographs on vacuum technology and processing subjects. They are all very good and worth checking out. Some of the books are required minimum reading for vacuum practitioners.

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2. [www.thinkSRS.com](http://www.thinkSRS.com): The SRS website is packed with very useful application notes related to vacuum applications and instrumentation. Check it out! We are constantly adding new notes to our list of applications.

