
References

- Ackelid U., Armgrath M., Spetz A. and Lundstrom I., Ethanol sensitivity of Palladium-gate metal- oxide- semiconductor structures, *IEEE electron device Letters*, vol. 7, pp. 6, 1986.
- Atanassova, E., Kassabov., J., and Goranova, E., Low temperature plasma nitridation of thin thermal SiO₂ and Silicon surface with native oxide, *Microelectronics J.*, vol. 21, pp.5-21, 1990.
- Arkinson, J. K., Shahi, S. S., A thick-film electrochemical instrument, *Sensors and Actuators B*, vol. 4, pp. 175-181, 1991.
- Atkins, P., Physical Chemistry, *Oxford University Press*, UK, 1998.
- Alexe, M., Measurement of interface trap states in metal–ferroelectric–silicon Heterostructures, *Applied physics letters*, vol. 72, no. 18, 1998
- Arbiol, C. J., Ph.D Thesis, *University of Barcelona*, Chap.1, 17-60, 2001.
- Augus, H., Nunesb, Y., Fortunatoa, E., Gordob, P., Maneirab, M., and Martin, R., “Correlation between a Si:H surface oxidation process and the performance of MIS structures” *Thin Solid Films*, vol. 383, pp.185-188, 2001.
- Abom A. E., Comini E., Sberveglieri G., Hultman L., Eriksson M, Thin oxide film as surface modifiers of MIS field effect gas sensors, *Sens. & Act. B*, vol. 85, pp. 109-119, 2002(a).
- Abom, A. E., Persson, P., Hultman, L., Eriksson, M., Influence of gate metal film growth parameters on the properties of gas sensitive field effective devices, *Thin solid films*, vol. 233, pp. 409, 2002(b).
- Altindal, S., Dokme, I., Tataroglu, A., Density of interface states, excess capacitance and series resistance in the metal-insulator-semiconductor (MIS) solar cells, *Solar Energy Material Cells*, vol. 85, pp. 348-358, 2005.
- Andringa, A. M., Spijkman, M. J., Smits, E. C. P., Mathijssen, S. G. J., Hal, P. A. V., Setayesh, S., Willard, N. P., Borshcheve, O. V., Ponomarenko, S. A., Blom P. W. M, Leeuw, D. M. D., Gas sensing with self assembled monolayer field-effect transistors, *Organic Electronics*, vol. 11, pp. 895-898, 2010.
- Baciocchi, M., et al., Cu/Pd thin film thermopile – as a temperature and hydrogen sensor, *Sensors and Actuators*, A21 A23, pp 631-635, 1990.
- Bell, A. T., “Abstract: fundamentals of plasma chemistry,” *J. Vac. Sci. Technol.*, vol. 16, pp.418-419, 1996.

- Balyuba, V., I., Gritsyk, V., Yu., D. T.A., Kalygina, V. M., Nazarov, S. S., Panin, A. V., and Khludkova, L. S., Effect of thermal annealing on the sensitivity of Si based MOS diodes to reducing gases, *Physics of Semiconductor devices*, vol. 40, No. 12, pp. 1470-1475, 2006.
- Boureane, K., Keffous A., Nezzal, G., Boureane, A., Boukezzata, A., Influence of thickness and porous structure of SiC layers on the electrical properties of Pt/Si/p Si Schottky diodes for gas sensing purposes, *Sens and Act, B*, vol. 29, pp. 612-620, 2008.
- Chanana, R. K., Dwivedi, R., Srivastava, S. K., Study of electrical properties of SiO₂ grown by plasma cleaned silicon surfaces, *Solid State Electronics*, vol.34, pp.1463-1465, 1991.
- Chanana, R. K., Dwivedi, R., Srivastava, S. K., Silicon wafer cleaning with CF₄/H₂ plasma and its effect on the properties of dry thermally grown oxide, *Solid State Electronics*, vol. 35, pp. 1417-1421, 1992.
- Chung, W.Y., Kim, T.H., Hang, Y.H., and Lee, D.D., "Characterization of porous Tin oxide films and their applications to microsensor fabrication, *Sensors Actuators B: Chemical*, vol. 24 pp.482-485, 1995.
- Capone, S., Forleo, A., Francioso, L., Rella, R., Siciliano, P., Spadavecchia, J., Presicce, D. S., Taurino, A. M., Solid state gas sensors: state of the art and future activities, *Journal of Optoelectronics and Advanced materials*, vol. 5 No. 5, pp. 1335-1348, 2003.
- Casals, O., Barcones, B., Rodríguez, A. R., Serre, C., Rodríguez, A. P., Morante, J. R., Godignon, P., Monsterrat, J., Characterisation and stabilization of Pt/TaSi₆/SiO₂/SiC gas sensor, *Sensors and Actuators B*, vol. 109, pp. 119-127, 2005.
- Chang, C. F., Tsai, T. H., Chen, H. I., Lin, K. W., Chen, T. P., Chen, L. Y., Liu, Y. C., Liu, W. C., "Hydrogen sensing properties of Pd/SiO₂/AlGa_{0.5}N MOS diode", *Electrochemistry Communications*, vol. 11, pp. 65-67, 2009.
- Chiu, S. Y., Tsai, J. H., Huang, H. W., Liang, K. C., Huang, T. H., Liu, K. P., Tsai, T. M., Hsu, K. Y., Lour, W. S., Hydrogen sensors with double dipole layers using a Pd mixture-Pd triple layer sensing structure, *Sens. And Act. B*, vol. 141, pp. 2532-537. 2009.
- Cheolwoo, J., Changho, S., and Daeil, K., An ITO/Au/ITO Thin Film Gas Sensor for Methanol detection at room temperature, *Transaction on electrical and electronic materials*, 11:2, pp.77-80, 2010.
- Dobos, K., Hofflinger, B., and Zimmer, G., CO Sensitivity of MOS transistors with Pd film gate, *Proceeding of 4th International Conference on Solid State Surface*, Cannes, 1980.

- Dobos, K., Armgrath, M., Zimmer, G., and Lundstrom, I., The influence of different insulators on Pd gate metal- insulator-semiconductor hydrogen sensors, *IEEE transactions on electronic devices*, vol. 31, pp. 4, 1984.
- Dobos, K., Zimmer, G., Performance of Carbon mono oxide sensitive MOSET's with Metal- Oxide semiconductor gates, *IEEE transactions on electronic devices*, vol. 32, pp. 7, 1985.
- Demarne V. et al., Electrical transport properties of thin polycrystalline SnO₂ film sensors, *Sensors and Actuators B*, vol. 7, pp. 704-708, 1992.
- Dwivedi, D., Dwivedi, R., Srivastava, S. K., Sensing properties of palladium-gate MOS (Pd-MOS) hydrogen sensor-based on plasma grown silicon dioxide, *Sensors and Actuators B*, vol. 71, pp. 161-168, 2000.
- Daudi, K., Sandhu, C.S., Moadhen, A., Ghica, C., Canut, B., and B. Bessais, "ITO spin-coated porous silicon structures" *Mater. Sci. Engg. B*, vol. 101, pp. 262-265, 2003.
- David, J., Scott, S. M., Zulfiqur, A., and O'Hare William T., Review: Chemical Sensors for Electronic Nose Systems, *Microchim. Acta*, vol. 149, pp. 1-17, 2005.
- Eichert, H., and Fischer, M., Combustion Related Safety Aspects of Hydrogen in Energy Applications, *International Journal of Hydrogen Energy*, vol. 11, pp. 117-124, 1986.
- Evans, N. J., Petty, M. C. and Robert, G. G., Interface State effect in Pd- gate MOS hydrogen, *Sensors and Actuators*, vol. 9, pp. 165-175, 1986.
- Eriksson, M., Surface and interface phenomena studied with Pd-metaloxide-semiconductor structures: Adsorption, catalytic reactions, hydrogen sensing and Pd restricting, *Linkoping Studies in Science and Technology*, Dissertation No 504, 1997.
- Ekedahl, L. G., Eriksson, M., and Lundstrom, I., Hydrogen sensing mechanisms of metal insulator interfaces, *Acc. Chem. Res.*, vol. 31, No. 5, pp. 249, 1998.
- Eriksson, M., and Ekedahl, L. G., Hydrogen adsorption states at the Pd/SiO₂ interface and simulation of the response of a Pd metal-oxide-semiconductor hydrogen sensor *J. Appl. Phys.*, vol. 83, pp. 3947-3951, 1998.
- Eranna, G., Joshi, B. C., Runthala, D. P., and Gupta, R. P., Oxide Materials for Development of Integrated Gas Sensors – A Comprehensive Review, *Critical Reviews in solid State and Materials Sciences*, vol. 29, pp. 111-188, 2004.
- Eriksson, M., Salomonsson, A., and Lundstrom, I., The influence of the insulator surface properties on the hydrogen response of field effect gas sensors, *Journal of applied Physics*, vol. 98, pp. 34903(1-3), 2005.

- Fare, T. J., and Zemel, J. N., Admittance studies of hydrogen induced states at the silicon-silicon dioxide interface, *Sensors and Actuators*, vol. 11, pp. 101-133, 1987.
- Fogelberg, J., Lundstrom, I., Petersson, L. G., Ammonia dissociation on oxygen covered Palladium studied with a Hydrogen sensitive Pd-MOS device, *Physica Scripta*, vol. 35, pp. 702, 1987.
- Fang, Y. K., Hwang, S. B., Lin, C. Y. and Lee, C. C., *Appl. Phys. Lett.*, vol. 57, pp. 2686-2688, 1990.
- Formoso, M. A., Maclay, G. J., The effect of hydrogen and carbon mono oxide on the interface state density in MOS gas sensors with ultrathin Palladium gates., *Sensors and Actuators B*, vol. 2, pp. 11-22, 1990.
- Fleisher, M., et al., Sensing of reducing gases at high temperature using long-term stable Ga₂O₃ thin films, *Sensors and Actuators B*, vol. 6, pp 257-261, 1992.
- Flippov, V. I., Terntjev, A. A., Yakimov, S.S., Electrode structure effect on the selectivity of gas sensors, *Sensors and Actuators B*, vol. 28, pp. 55, 1995.
- Fogelberg, J., Eriksson, M., Dannetun, H., and Petersson, L., G., Kinetic modelling of hydrogen adsorption/absorption in thin films on hydrogen sensitive field effect devices: Observation of large hydrogen induced dipoles at the Pd-SiO₂ interface," *J. Appl. Phys.*, vol. 78, pp. 988, 1995.
- Flippov, V. I., Tenenjtjev, A. A., Yakimov, S. S., MOS structure (pd-SiO₂-Si) based gas sensor with an external catalyst element, *Sensors and Actulators B*, vol. 41, pp. 153-158, 1997.
- Flippini D., Wei T., Aragon R. and Weimar U., New NO₂ sensor based on Au gate field effect devices, *The 14th European Conference on solid state transducers*, Copenhagen, Denmark, pp. 27-30, 2000.
- Fukuda, H., Kasama, K., Nomura, S., Highly sensitive MISFET sensors with porous Pt-SnO gate electrode for CO gas sensing application, *Sensors and Actuators B*, vol. 64, pp. 163-168, 2000
- Flippini, D., Rosch M., Aragon R., and Weimar, U., NO₂ sensitive Au gate metal-oxide-semiconductor capacitors, *J. App. Phy.*, vol. 90, pp. 4, 2001.
- Filippini, D. and Lundström, I., *Sensors and ActuatorsB*, vol. 95, pp. 116, 2003.
- Gopel, W. G., Solid state chemical sensors: Atomic models and research trend, *Sensors & Actuators B*, 16, 1989; B1, 103-107, 1990; B2, pp. 71-78, 1990.
- Geatches, R. M., et al., Single-Crystal metal oxide gas sensors, *Sensors and Actuators B*, vol. 4, pp 467-472, 1991.

- Gaggiotti, G., Goldikas, A., Kaciulis, S., Mattogno, G., and Setkus "A Temperature dependancies of sensitivity and surface chemical composition of SnO₂ gas sensor," *Sensors Actuators B: Chemical*, vol. 25, pp.516-519, 1995.
- Gaman, V. I., Duchenko, M. O., and Kalygina, V. M., *Izv. V., Zaved, U.*, vol. 42, No. 9, pp. 3, 1999.
- Gupta, S. K., Azam, A., and Akhtar, J., Variation of interface trap level charge density within the bandgap of 4H-SiC with varying oxide thickness, *Pramana- journal of physics*, vol. 76, no.1, pp. 165-172, 2011.
- Hord J., Is Hydrogen a safe Fuel?, *International Journal of Hydrogen Energy*, vol. 3, pp. 157-176, 1978.
- Haris, L. A., *J. Electrochem.Soc. Solid St. Sci. Technol.*, vol. 127, pp. 2657, 1980.
- Huges, R. C., Schubert, W. K., Zipperian, T. E., Rodriquez, J. L., and Plut, T. A., Thin-film palladium and silver alloys and layers for metal- insulator- semiconductor sensors, *J. Appl. Phys.*, vol. 62, pp. 1074-1083, 1987.
- Hubner, H. P., and Drost, S., Tin oxide gas sensors: an analytical comparison of gas sensitive and non-gas sensitive thin film, *Sensors and Actuators B*, vol. 4, pp 463-466, 1991.
- Hisashi, F., Kouichiro, K., Shigeru, N., Highly sensitive MISFET sensors with porous Pt-SnO gate electrode for CO gas sensing application, *Sensors and Actuators B*, vol. 64, pp. 163-168, 2000.
- Irokawa, Y., Hydrogen sensors using nitride-based semiconductor diodes: The Role of Metal/Semiconductor Interfaces, *Sensors*, vol. 11, pp. 674-695, 2011
- Johnson, O.W., Pack, S. H., Deford, J. W., *J. Appl. Phys.*, vol. 46, pp. 1026, 1975.
- Jakobowski and Iniewski, K., Simple formulas for analysis of C-V characteristics of MIS capacitor, *Solid State Electronics*, vol. 26, pp. 755,1983.
- Jelly K. W., Maclay G. J., A dual mechanism solid state carbon- monoxide and hydrogen sensor utilizing an ultrathin layer of Pd, *IEEE Transactions on Electron Devices*, vol. 34, pp. 10, 1987.
- Jackman, R. B., Beckman, J., and Foord, J. S., Chemical vapour deposition of diamond from a novel capacitively coupled r. f. plasma source," *Materials Science and Engineering B*, vol.29, pp. 216-219, 1995.
- James, D., Scott, S. M., Ali, Z. and O'Hare, W. T., Review: Chemical Sensors for Electronic Nose Systems, *Microchim. Acta*, vol. 149, pp. 1-17, 2005.
- Jeong, C., Shin, C., and Kim, D., An ITO/Au/ITO Thin Film Gas Sensor for Methanol detection at room temperature, *Transactions On electrical and electronics materials*, vol. 11, no. 2, pp. 77-80, 2010.

- Kuliev, B. B., Lalevic, B., Yousuf, M., and Safarov, D. M., *Sov. Phys. Semicond.*, vol. 17, pp. 875, 1983.
- Kassabov, J., Atanassova, E., Dimitrov, D., and Goranova, E., Argon plasma treatment effects on Si-SiO₂ structures,” *Solid State Electronics*, vol.31, pp. 147-154, 1988(a).
- Kassabov, J., Atanassova, E., Dimitrov, D. and Vassileva, J., Effect of hydrogen plasma on thin-oxide Si-SiO₂ structures, *Semicond. Sci. Technol.*, vol. 3, pp. 686, 1988(b).
- Kassabov, J., Atanassova, E., and Goranova, E., Inversion channel transport properties of plasma treated Si-SiO₂ structures with different oxide thickness, in: H. Boenig (Ed.), *Advances in Low Temperature Plasma Chemistry, Technology, Applications*, Technomic, Lancaster, U.S.A, pp. 249-264, 1988 (c).
- Kassabov, J., Atanassova, E., Goranova, E., Dimitrov, D., and Vassileva, J., Plasma processing effects on O₂-HCl grown Si-SiO₂ structures, *Solid State Electronics*, vol. 32, pp. 535-, 1989.
- Kohl, D., The role of noble metals in the chemistry of solid-state gas sensors, *Sensors & Actuators B*, vol. 1, 1990.
- Kassabov, J., and Atanassova, E., Effects of low temperature plasma (Ar, He, H₂) on thin Si-SiO₂ structures,” *In: H.Boenig (Ed.), Advances in low temperature plasma*, Technomic, Lancaster, USA, pp.123-152, 1992.
- Kobayashi, H., Kogetsu, Y. and Nakato, Y., *Surface Science*, vol. 69, pp. 306, 1994.
- Kobayashi, H., Iwadate, H., Kogestsu, Y., Nakato, Y., Mechanism of the formation of hydrogen-induced interface states for Pt/ SiO₂/ silicon MOS tunneling diodes, *J. Appli. Physics*, vol. 78, pp. 6554-6561, 1995.
- Kunimoto, A., Abe, N., Uchida, H., Katsube, T., Highly sensitive semiconductor NO_x, gas sensor operating at room Temperature, *Sensors and Actuators B*, vol. 65, pp. 122-124, 2000.
- Kim, C. K., Lee, J. H., Choi, S. M., Noh, I.H., Kim, H. R., Cho, N. I., Hong, C., and Jang, G. E., Pd and Pt-SiC Schottky diodes for detection of H₂ and CH₄ at high temperature , *Sensors and Actuators B*, vol. 77, pp. 455-462, 2001.
- Kanungo, J., Saha, H., Basu, S., Effect of porosity on the performance of surface modified porous silicon hydrogen sensors, *Sens. And Act.*, vol. 147, pp. 145-151, 2010.
- K, K. S., Baek, W. H., Kim, J. M., Yoon, T. S., Lee, H. H., Kang, C. J., Kim, Y. S., A Nanopore Structured High Performance Toluene Gas Sensor Made by Nanoimprinting Method, *Sensors*, vol. 10, pp. 765-774, 2010.

- Kashyout, A. B., Soliman, H. M. A., Hassan, H. S. and Abousehly, A. M., *Journal of Nanomaterials*, Article ID 341841, doi: 10.1155/2010/341841, 2010.
- Kumar, V., Sunny, Dwivedi, R., Mishra, V. N., Das, R. R., Fabrication and characterization of gridded Pt/SiO₂/Si MOS structure for hydrogen and hydrogen sulphide sensing, *Materials Chem. And Physics*, vol. 146, pp. 418-424, 204514, 2014(a).
- Kumar, V., Sunny, Dwivedi, R., Mishra, V. N., Das, R. R., Influence of gridded gate structure on gas sensing behaviour of hydrogen, *J. App. Phys.*, vol. 115, pp. 204514, 2014(b).
- Konduru, T., Rains, G. C., and Li, C., A customized metal oxide semiconductor-based gas sensor array for onion quality evaluation: system development and characterization, *Sensors* vol.15, pp.1252-1273, 2015.
- Lewis, F. A., The Palladium-Hydrogen System, *Academic Press, New York*, Ch 1, pp. 4, 1967
- Ligenza, J. R., and Kuhn, M., DC arc anodic plasma oxidation a new vacuum process for solid state device fabrication, *Solid State Technol.*, vol. 13, pp.33-38, 1970.
- Lundstrom, K. I., Shivaraman, M. S., and Svensson, C. S., *Appl. Phys. Lett.*, vol. 26, pp. 55, 1975(b).
- Lundstrom, I., Shivaraman, M. S., and Svensson, C. M., A hydrogen-sensitive Pd-gate MOS transistor, *J. Appl. Phys.*, vol. 46, no. 9, pp. 3876-3881, 1975(a).
- Lundstrom, I., Shivaraman, M. S., Stibler, L., and Svensson, C., Hydrogen in smoke detected by the Pd-gate field-effect transistor, vol. 47, pp. 738, 1976(a).
- Lundstrom, I., and Distefano, T., Hydrogen induced interfacial polarization at Pd-SiO₂, *Surface Sci.*, vol. 59, pp. 23-32, 1976(b).
- Lundstrom, I., Shivaraman, M.S., and Svensson, C., Chemical reactions on palladium surfaces studied with Pd mos structures, *Surface science*, 64, pp. 497-519, 1977.
- Lundstrom, I., *Sensors and Actuators*, vol. 1, pp. 403, 1981.
- Lundstrom, I. and Soderberg, D., *Sensors and Actuators*, vol. 2, pp. 105, 1981.
- Lundstrom, Soderberg, D., Hydrogen sensitive MOS-structures Part 2: Characterization," *Sensors Actuators*, vol. 2, pp. 105-138, 1981/82.
- Lundstrom, I., Spetz, A., Winquist, F., Ackleid, U., and Sundgreen, H., Catalytic Metals and Field-effect Devices-a Useful Combination, *Sensor and Actuator B*, vol. 1, pp. 15-19, 1983.
- Lundstrom, I., Armgarth, M., Spetz, A. and Winquist, F., *Sensors and Actuators*, vol. 10, pp. 399, 1986(a).

- Lundstrom, I., Armgarth, M., Spetz, A., and Winquist, F., Physics of ammonia sensitive metal oxide semiconductor structures, *Proc. 2nd Int. Meet Chemical Sensors*, Bordeaux, pp. 387 – 390, 1986(b),
- Lundstrom, I., Armgarth, M., Petersson, L. G, *CRC Crit. Rev. Solid State Matter. Sci.*, vol. 15, pp. 201, 1989.
- Lundstrom, I., Armgarth, M., and Petersson, L. G.,, “Physics with catalytic metal gate chemical sensors,” *CRC Crit. Rev., Solid State mater. Sci.*, vol. 15, pp. 201-278, 1989.
- Lundstrom, I., Spetz, A., Winquist, F., Ackelid, U., and Sundgren, H., Catalytic metals and field effect devices- A useful combination, *Sensors and Actuators B: Chemical*, vol. 1, pp. 15-20, 1990.
- Lalauze R. et al., Thin film for gas sensors, *Sensors and Actuators B*, vol. 3, pp. 175-182, 1991.
- Lundstrom, I., Ederth, T., Kariis, H., , Sundgren, H., Spetz, A., Fredrik, W., Recent developments in field effect gas sensor, *Sensors and Actuators B*, vol. 23, pp. 127-133, 1995,
- Li, G. J., X.H., Zhang and S. Kawi, “Relationships between sensitivity, catalytic activity and surface area of SnO₂ gas sensors,” *Sensors Actuators B: Chemical*, vol. 60, pp. 64-70, 1999.
- Lofdahl, M., Utaiwasin, C., Xarlsson, A., Lundstrom, I., Eriksson Mats, Gas response dependence on gate metal morphology of field effect devices, *Sensors and Actuators B*, vol. 80, pp. 183, 2001.
- Lin, K. W., Chen, H. I., and Lu, C. T., *Semiconductor Science and Technology*, vol. 18, pp. 615-619, 2003.
- Liu, X., Cuenya, B. R., McFarland, E. W., A MIS device structure for detection of chemically induced charge carriers, *Sens. & act B*, vol. 99, pp. 556-561, 2004.
- Li, D., McDaniel, A. H., Bastasz, R., Medlin J. W., Effects of a polyimide coating on the hydrogen selectivity of MIS, *Sensors and Actuators B*, vol. 115, pp. 86-92, 2006.
- Lombardi, R., Aragon Ricardo, MOS device chemical response reversal with temperature *Sensors and Actuators B*, vol. 144, pp. 457-461, 2010.
- Maclay, G. J., MOS hydrogen sensors with ultrathin layers of Pd, *IEEE transaction on electronic devices*, vol. 32, pp. 7, 1985
- Matsura, S., New developments and applications of gas sensors in Japan, *Sensors and Actuators B*, vol. 13-14, pp. 7-11, 1993.

- Manjoo, S., New development and applications of gas sensors in Japan, *Sensors and Actuators B*, vol. 13, pp. 7-11, 1993.
- Mishra, V. N., Agarwal, R. P., Thick film hydrogen sensor, *Sensors & Actuators B*, vol. 21, pp. 209-212, 1994.
- Nicolin E. H., and Brews, J. R., MOS (Metal oxide semiconductor) Physics and Technology, Wiley New York, 1982.
- Nylander, L., Armgarth, M., and Svensson, C., *J. Appl. Phys.*, vol. 56, pp. 1177, 1984.
- Nie, H. Y., and Nannichi, Y., *Japan. J. Appl. Phys.*, vol. 30, pp. 906, 1991.
- Nakagomi, S., Shida, T., Hoshi, H., Kokubun, Y., Field effect hydrogen sensors devices with floating gate exhibiting unique behaviour, *Sensors & Actuators B*, vol. 125, pp. 408-514, 2007.
- Ogawa, et al., Electrical properties of tin-oxide ultra-fine particle film, *J. Electrochem. Soc., Solid State Science and Technology*, Vol. 128, No. 9, pp 2020-2025, Sept. 1981.
- Oyabu, T., Osawa, T., and Kurbe, T., Sensing characteristics of tin oxide thick film gas sensor, *J. Appl. Phys.*, vol. 53, No. 11, 7125-7130, 1982.
- Pulfre, D. I., and Reche, J. J. H., Preparation and properties of plasma-anodized Silicon dioxide film," *Solid State Electronics*, vol.17, pp. 627-632, 1974.
- Poteat, T. L., and Lalevic, B., *IEEE Electron Device Lett.*, vol. 2, pp. 32, 1981.
- Puzzovio, D., Surface interaction mechanism in metal-oxide semiconductors for alkane detection, Ph.D. Thesis, 2008.
- Pandey, P., Srivastava, J. K., Mishra, V. N., Dwivedi, R., *Sens. Transducer*, vol. 103, pp. 171, 2009(a).
- Pandey, P., Srivastava, J. K., Mishra, V. N., Dwivedi, R., *Solid State Sci.*, vol. 11, pp. 1370, 2009(b).
- Pandey, P., Srivastava, J. K., Mishra, V. N., and Dwivedi, R., Effect of RF and microwave oxygen plasma on the performance of Pd gate MOS sensor for hydrogen, *Solid State Sciences*, vol. 12, pp. 1540-1546, 2010.
- Ruths, P. F., Ashok, S., Fonash, S. J. and Ruths, J. M., A study of Pd/Si MIS Schottky barrier diode hydrogen detector, *IEEE Trans Electron Devices*, vol. 28, No. 9, pp. 1003 -1009, 1981.
- Ross, J. F., Robins, I., and Webb, B. C., The ammonia sensitivity of platinum-gate MOSFET devices: Dependence on gate electrode morphology, *Sensors and Actuators*, 11, 73-90, 1987.

- Ryzhikov, A., Robaut, F., Labeau, M. and Gaskov, A., New gas sensitive MIS Structures pt/Al₂O₃ (M=Pt, Rh)/Si with granular dielectric layer," *Sens. Actuators B: Chemical*, vol. 133, pp. 613-616, 2008.
- Rahman, M. H., Thakur, J. S., Rimai, L., Perooly, S., Naik, R., Zhang, L., Auner, G. W., Newaz, G., Dual-mode operation of a Pd/AlN/SiC device for hydrogen sensing, *Sensors & Actuators B*, vol. 129, pp. 35-39, 2008.
- Rina, L., Aragon Ricardo, MOS device chemical response reversal with temperature, *Sensors and Actuators B*, vol. 144, pp. 457-461, 2010.
- Snow, E. H., Grove, A. S., Deal, B. E., Sah, C. T., Ion transport phenomena in insulating films," *J. Appl. Phys.*, vol. 36 pp. 1664-1673, 1965.
- Shaw, D. J., Middelhoek, S., Introduction to colloid and surface chemistry, Butterworth-Heinemann, Oxford, UK, 1966.
- Sax, N. I., Dangerous properties of industrial materials, 4th ed., *Van Nostrand Reinhold*, New York, USA, 1975.
- Shivaraman, M. S., Lundstrom, I., Svensson, C., Hammarsten, H., *Electronics Letters*, vol. 12, pp. 484, 1976.
- Seiyoma, M. S., Lundstrom, I., Svensson, C., Hammarsten, H., Hydrogen sensitivity of palladium-thin-oxide-silicon schottky barriers, *Electron Lett.*, pp. 484-485, 1976.
- Soderberg, D., and Lundstrom, I., *Solid State Comm.*, vol. 45, pp. 169, 1980.
- Sze, S. M., Physics of semiconductor Devices, 2nd ed., *Wiley, New York*, 1981.
- Sze, S. M., and NG, K. K., Physics of semiconductor Devices, 3rd ed., *Wiley, New York*, 1987.
- Sberveglieri, G., Recent developments in semiconducting thin-film gas sensors, *Sensors and Actuators B*, vol. 23, pp. 103-109, 1995.
- Sanjeev, M., Gland J. L, Wise, K. D., Schwank, J. W., A silicon micro machined conducto metric gas sensor with a mask less Pt sensing film deposited by selected area CVD, *Sensors and Actuators B*, vol. 35-36, pp. 312-319, 1996.
- Seo, H., Endoh, T., Fukuda, H., and Nomura, S., Highly sensitive MOSFET gas sensors with porous platinum gate electrode, *Electron. Lett.*, vol.33, pp. 535, 1997.
- Srivastava, S. K., *et al.*, Effect of oxygen and hydrogen plasma treatment on the room temperature sensitivity of SnO₂ gas sensor, *Microelectronics journal*, 1998.
- Solomonsson, A., Erikssons, M., Dannetun, H., *J. Appl. Phys.*, vol. 98, pp. 14505, 2005.

- Salehi, A., Vahdat, N., Characterization of magnetic Ni/n-Si Schottky contact for hydrogen gas sensing applications, *Sensors & Actuators B*, vol. 122, pp. 572-577, 2007
- Shafiei, M., K. Kalantar-zadeh and W. Wlodarski, E. Comini, M. Ferroni, G. Sberveglieri, S. Kaciulis, and L. Pandolfi, Hydrogen gas sensing performance of Pt/SnO₂ nanowires/SiC MOS devices, Vol.1, no. 3, pp. 771-783, 2008
- Soo, M. T., Cheong, K. Y., and Noor, A. F. M., *Sensors and Actuators B*, vol. 151, pp. 39, 2010.
- Su, K. K., Hyuk, B. W., Min, K. J., Sik, Y. T., Ho, L. H., Jung, K. C., Sang, K. Y., A Nanopore Structured High Performance Toluene Gas Sensor Made by Nanoimprinting Method, *Sensors*, vol. 10, pp. 765-774, 2010.
- Taguchi, N., US Patent, 3, 631, 436, 1970
- Taguchi, N., British Patent, 1, 257,155, Dec 1991.
- Timothy J. Truex, Introduction of sulphur species on the adsorption of reaction molecules and thus reduce overall catalyst activity, *SAE International*, vol. 01, pp. 1543, 1999.
- Trinchi, A., Kandasamy, S., Wlodarski, W., High Temp. Field Effect hydrogen and hydrocarbon gas sensors based on SiC MOS devices, *Sensors Actuators B: Chemical*, vol. 133, pp. 705-716, 2008.
- Tan, E. T. H., Ho, G. W., Wang, A. S. W., Kawi, S., and Wee, A.T. S., Gas sensing properties of tin oxide nanostructures synthesized via a solid-state reaction method, *Nanotechnology*, vol. 19, pp. 255706, 2008.
- Tang, W. M., Leung, C. H., and Lai, P. T., Effect of insulator thickness on the sensing properties of MISiC Schottky- diode hydrogen sensor, 4th IEEE international Symposium on Electronic Design, Test and applications, 2008.
- Tasaltin, N., Faith, D., Mehmet A., E., Hayrettin, Y., Zafer, Z. O., Pd native nitride/n-GaAs structures as hydrogen sensors, *Sensors and Actuators B*, vol. 130, pp. 59-64, 2008
- Tesfamichael, T., Electron beam evaporation of tungsten oxide films for gas sensors, *IEEE Sensors Journal*, Vol. 10, No. 11, pp. 1796-1802, 2010.
- Vavilov, V. S., Kiselev, V. F., and Mukashev, B. N., Defects in the bulk and at the surface of the silicon, Nauka, Moscow, (In Russia), 1990.
- Vlachos, D. S., Papadopolos, C.A., Avaritsiotis, J. A., *Sensors and Actuators B*, vol. 44, pp. 458, 1997.
- Wagner, C., Hauffe K., *Elektrochem Ztschr*, vol. 33, pp. 172, 1938

- Winqvist, F., Spetz, A., Armgarth, N. C. and Lundstrom, I., Modified palladium metal-oxide-semiconductor structures with increased ammonia gas sensitivity, *Appl Phys Lett.*, vol. 43, pp. 839 – 841, 1983.
- Weixn, Z. and Yibing, Z., The Temperature characteristics of an H₂S sensitive Pd gate MOS Transistor, *Sensors and Actuators*, vol. 15, pp. 85-93, 1988.
- Watson, J., and Davies, G., A low-level carbon monoxide monitor, *Sensors and Actuators B*, vol. 2, 1990.
- Weidmann, O., Hermann M., Steinhoff G., Wingbrant H., Spetz A. L. M., Eichhoff M., Influence of surface oxides on hydrogen sensitive Pd-GaN Schottky diode, *Appl. Physics Letters*, vol. 83, pp. 4, 2003.
- Wasa, K., Kitabatake, M., Adachi, H., Thin film materials Technology: sputtering of compounds materials, William Andrew, Inc., Norwich, NY, U. S. A., 2004
- Wei, H., Sun, H., Wang, S., Chen, G., Hou, Y., Guo, H., Ma, X., Low temperature H₂S sensor based on copper oxide/tin dioxide thick film, *Journal of Natural Gas Chemistry*, vol. 19, pp. 393-396, 2010.
- Yamamoto, Y., Tonomura, S., Matsuoka, T., and Tsubomura, H. A., Study on a Pd-TiO₂ schottky diode as a detector for gaseous components, *Surface Science*, 92, 400-406, 1980
- Yadava, L., Dwivedi, R., Srivastava, S. K, *Solid State Electron.*, vol. 33, pp. 1229-, 1990.
- Yadava, L., Verma, R., Singh, R. S., Detection and sensing mechanism of acetone with modelling using Pd/SiO₂/Si structure, *Thin Solid Films*, vol. 520, pp. 3039-3042, 2012.
- Zamani, C., Shimano, K., Yamazoe, N., A new capacitive-type NO₂ gas sensor combining an MIS with a solid electrolyte, *Sensors & Actuators B*, vol. 109, pp. 216-220, 2005.