

## Implementation of Electronic Nose to Detect LPG Leakage

S. N. Patil \*, S. R. Ghatge \*\*, A. M. Pawar \*\*\*

\*,\*\*\* Department of Electronics, Tuljaram Chaturchand College of Arts, Science and Commerce, Baramati, Maharashtra, India.

\*\* Department of Electronics, Gopal Krishna Ghokhale College, Kolhapur, Maharashtra, India.

Periodicity: January - June 2021

DOI : https://doi.org/10.26634/jes.9.2.17990 (https://doi.org/10.26634/jes.9.2.17990)



0 Total citations (https://badge.dimensions.ai/details/doi/10.26634/jes.9.2.17990?domain=https://imanagerpublications.com)

0 Recent citations

n/a Field Citation Ratio

n/a Relative Citation Ratio

### Abstract

The application of smart electronic instruments to detect leakage of inflammable or poisonous gases in the environment has significant importance in agricultural, industrial applications. Detecting LPG through an early warning system at home, hotels, restaurants, and LPG warehouses can prevent fire accidents and save lives and avoid economic losses. Digital electronics technology are more reliable in designing smart electronic systems to sense gas, and measure its concentration numerically. Using the AVR Atmega16 microcontroller, a smart electronic nose design has been developed to detect LPG leakage. For present system, LPG sensor Figaro 813 and ferrite based sensor interfaced with on-chip ADC of AVR microcontroller. The system is in agreement with the actual values and can detect the presence of LPG due to a leakage. In this paper, the results of both sensors are interpreted. The device is primarily in use for the security of smart kitchens.

### Keywords

LPG Sensor, Ferrite Sensor, AVR Microcontroller, Electronic Nose, Embedded Technology.

### How To Cite This Article?

Patil, S. N., Ghatge, S. R., and Pawar, A. M. (2021). Implementation of Electronic Nose to Detect LPG Leakage. *i-manager's Journal on Embedded Systems*, 9(2), 1-6. https://doi.org/10.26634/jes.9.2.17990

### References

- [1]. Ladgaonkar, B. P., Patil, S. N. (2011). Designing of data acquisition system for susceptibility measurement. *International Journal of Electrical Engineering and Embedded Systems*, 8(1), 1-6.
- [2]. Ladgaonkar, B. P., Patil, S. N., & Tilekar, S. K. (2013). Development of Ni-Zn Ferrite based smart humidity sensor module by using mixed signal programmable system-on-chip. *Materials* (Vol. 310, pp. 490-493). Trans Tech Publications Ltd.
- [3]. Patil, S. N., Ladgaonkar, B. P., Tilekar, S. K., Deshpande, J. D., & Pawar, A. M. (2019a). Investigation of temperature sensitive electrical properties of manganese-zinc ferrite. *Journal of Physics: Conference Series* (JPHY), 1(1), 16- 23.
- [4]. Patil, S. N., & Ladgaonkar, B. P. (2013). Synthesis and implementation of NiZnFe<sub>2</sub>O<sub>4</sub> ferrites to design embedded system for humidity measurement. *Synthesis*, 2(8), 3813- 3822.
- [5]. Patil, S. N., & Pawar, A. M. (2020). Design of smart embedded system for detection of ammonia gas. *i-manager's Journal on Embedded Systems*, 9(1), 1-5. https://doi.org/10.26634/jes.9.1.17990
- [6]. Patil, S. N., Deshpande, J. D., Tilekar, S. K., Ladgaonkar, B. P., & Pawar, A. M. (2020a). Synthesis and implementation of polycrystalline ferrite material for smart sensor module. *Journal of Materials: Materials Research* (JMTR), 1(1), 1-6. https://doi.org/10.1016/j.matpr.2020.07.139
- [7]. Patil, S. N., Ladgaonkar, B. P., & Pawar, A. M. (2019b). Carbon dioxide gas sensing property of nickel substituted zinc ferrite. *i-manager's Journal on Embedded Systems*, 8(2), 1-6. https://doi.org/10.26634/jms.7.2.15161
- [8]. Patil, S. N., Pawar, A. M., & Ladgaonkar, B. P. (2017a). Synthesis and deployment of nanoferrites to design embedded system for monitoring of ammonia gas. *International Journal of Applied Engineering Technology* (IAET), 6(1), 27-31.

- [9]. Patil, S. N., Pawar, A. M., Deshpande, J. D., & Ladgaonkar, B. P. (2017b). Comparative study of ferrite based humidity sensor for smart sensor module design. *International Engineering (IRJSE)*, 1, 203-209.
- [10]. Patil, S. N., Pawar, A. M., Tilekar, S. K., & Ladgaonkar, B. P. (2016). Investigation of magnesium substituted nano particle zinc ferrites for relative humidity sensors. *Sensors* : 43.
- [11]. Patil, S. N., Pawar, A. M., Tilekar, S.K., & Ladgaonkar, B. P. (2020b). Development of an embedded system for measurement of temperature based on polycrystalline ferrite. *Electrical Electronics & Computer Science Engineering*, 5(1), 152- 157.
- [12]. Pawar, A. M., Deshpande, J. D., & Patil, S. N. (2020a). Development of an embedded system to measure soil moisture. *i-manager's Journal on E* <https://doi.org/10.26634/jes.9.1.17718>
- [13]. Pawar, A. M., Deshpande, J. D., & Patil, S. N. (2020b). Development of smart electronic system to implement smart home. *i-manager's Journal on Digital* <https://doi.org/10.26634/jdp.8.1.17782>
- [14]. Pawar, A. M., Patil, S. N., & Ghatage, S. R. (2021). Development of wireless sensor node for automization in restaurant services. *International Research Journal of Engineerir* 3034-3037.
- [15]. Pawar, A. M., Patil, S. N., & Ladgaonkar, B. P. (2014). Design and implementation of wireless sensor node for WSN for automatic meter reading. *International Journal of Computer Science and Information Technology*, 1(1), 28-31.
- [16]. Pawar, A. M., Patil, S. N., Powar, A. S., & Ladgaonkar, B. P. (2013). Wireless sensor network to monitor spatiotemporal thermal comfort of polyhouse environment. *International Science, Engineering and Technology*, 2(10), 4866-4875.
- [17]. Tilekar, S. K., Patil, S. N., Shaikh, S. S., Pawar, A. M., & Ladgaonkar, B. P. (2011). Development and implementation of an embedded system to measure initial permeability o. *Journal of Electronic Engineering Research*, 3(1), 21-28.

#### We recommend

Development of Smart Electronic System to Implement Smart Home  
Aparna M. Pawar et al., *i-manager's Journal on Digital Signal Processing*, 2020

Design of Smart Embedded System for Detection of Ammonia Gas  
S. N. Patil, *i-manager's Journal on Embedded Systems*, 2020

An Electronics Solution to Facilitate Smart City for Waste Management  
Deepali M. Adat, *i-manager's Journal on Electronics Engineering*, 2019

First plug-and-play sensor-to-system solution for data acquisition  
*Sensor Review*, 1998

Intrusion Detection and Security System  
Prerna Sharma et al., *Nutrition & Food Science*, 2020

Geochemical characteristics and distribution patterns of subsurface brines in the Qianjiang Depression, Jiangnan Basin  
NIU Xinsheng et al., *Earth Science Frontiers*, 2021

Powered by **TREND MD**

If you have access to this article please login to view the article or kindly login to purchase the article

#### Username/Email

#### Password

[Forgot password?](#)

Remember me

Don't have an account? [Sign Up](#)

#### Purchase Instant Access


North Americas,UK,  
Middle East,Europe

India

	USD	EUR	INR
Pdf	<input type="radio"/> 35	<input type="radio"/> 35	<input type="radio"/> 200
Online	<input type="radio"/> 35	<input type="radio"/> 35	<input type="radio"/> 200
Pdf & Online	<input type="radio"/> 35	<input type="radio"/> 35	<input type="radio"/> 400

 ADD TO CART

Options for accessing this content:

- If you would like institutional access to this content, please recommend the title to your librarian.  
 [Library Recommendation Form \(https://imanagerpublications.com/uploads/RecommendationForm.pdf\)](https://imanagerpublications.com/uploads/RecommendationForm.pdf)
- If you already have i-manager's user account: Login above and proceed to purchase the article.
- New Users: Please register, then proceed to purchase the article.

[Submit New Paper \(https://imanagerpublications.com/home/indexpage/4/authors\)](https://imanagerpublications.com/home/indexpage/4/authors)   
 [Track Paper Status \(https://imanagerpublications.com/home/trackpaperdetails\)](https://imanagerpublications.com/home/trackpaperdetails)   
 [Buy Journal \(https://imanagerpublications.com/home/shopnowjournal/3\)](https://imanagerpublications.com/home/shopnowjournal/3)   
 [Track Your Subscription \(https://imanagerpublications.com/home/trackiniddetails\)](https://imanagerpublications.com/home/trackiniddetails)   
 [Journal Archive \(https://imanagerpublications.com/home/archivejournal/3\)](https://imanagerpublications.com/home/archivejournal/3)

[Authors \(https://imanagerpublications.com/home/indexpage/4/AuthorRightsAndGuidelines\)](https://imanagerpublications.com/home/indexpage/4/AuthorRightsAndGuidelines)   
 [Institutions/Librarians \(https://imanagerpublications.com/home/indexpage/3/institutions\)](https://imanagerpublications.com/home/indexpage/3/institutions)   
 [Agents \(https://imanagerpublications.com/home/adddealer/10\)](https://imanagerpublications.com/home/adddealer/10)   
 [Conferences \(https://imanagerpublications.com/home/conferencespage/15\)](https://imanagerpublications.com/home/conferencespage/15)

[About Us \(https://imanagerpublications.com/index/1/aboutus\)](https://imanagerpublications.com/index/1/aboutus)   
 [Careers \(https://imanager.exenta.org/public/Jobportal/Homepage.aspx?7jFWAqGa91M=\)](https://imanager.exenta.org/public/Jobportal/Homepage.aspx?7jFWAqGa91M=)   
 [Contact \(https://imanagerpublications.com/index/15/contact\)](https://imanagerpublications.com/index/15/contact)   
 [FAQ \(https://imanagerpublications.com/index/16/faq\)](https://imanagerpublications.com/index/16/faq)   
 [Terms and Conditions \(https://imanagerpublications.com/index/13/termsandconditions\)](https://imanagerpublications.com/index/13/termsandconditions)