

Gases—An Open Access Journal

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Gases (ISSN 2673-5628) is an international and interdisciplinary peer-reviewed open access journal on gas science and engineering published quarterly online by MDPI. *Gases* covers the field of applied science and engineering advances in natural gas, greenhouse gas control, and gas sensors. Its aim is to publish state-of-the-art papers, including original research articles, reviews, technical notes, and communications. There is no restriction on the length of papers. The full experimental details must be provided so that the results can be reproduced.

Natural gas has been taking increasing importance worldwide as coal is phased out in numerous locations. Fracking too has grown in importance and is now providing about two-thirds of the natural gas in the United States, which is equivalent to about 90% of gas wells in the United States. Many other countries, like China, are exploring the possibility of using fracking, so natural gas is assuming ever more importance in some of the major economies in the world. However, natural gas leaks seriously challenge efforts to maintain lower levels of greenhouse gases consistent with the IPCC goals of keeping greenhouse gases below 1.5 °C. Similarly, coal bed methane remains an important source of natural gas, which has both international promise and potential environmental consequences. All of this means that gas resources, exploration, reservoirs, and drilling technologies need more attention. Currently, most economic projections envisage natural gas being a dominant energy source until at least 2050; therefore, developments in all areas of natural gas extraction and use are essential.

Other areas, such as liquid natural gas, its use, its transportation, and its storage, are becoming of greater importance, as, for instance, international bodies seek to remove highly polluting fuels from marine transport. Finally, gas hydrates remain both a final source of combustible hydrocarbons that could be used and an environmental threat, as they are likely to be increasingly released due to global warming. Current estimates of the amount of CH₄ in gas hydrates are greater than 10⁴ Gt of carbon, which is approximately twice the amounts of carbon held in all of the fossil fuels on earth.

This means that risk management is of increasing importance to ensure that natural gas extraction and exploitation is done in a way that minimizes fugitive emissions. Such management means that gas sensors become of greater importance in terms of both remote measurements and the development of automatic measurements, perhaps with drones, and remote sensing. The journal will also consider papers that deal with mobile natural gas sensors and systems using cloud connections to allow better and more transparent use of the data generated. *Gases* will further endeavor to provide a forum for all of these areas, with an emphasis on significant research that leads to practical engineering application.

Gases will also welcome literature reviews and modelling papers on natural gas extraction, storage, and use. An area of major interest is the use of artificial intelligence methods, including neural networks, to improve and develop more powerful modelling tools. Models can also consider exergo-environmental assessments and overall assessments of the use of natural gas in the environment, both locally and globally.

Gases will also allow scientists and engineers to present their research on greenhouse gases, especially as it relates to carbon sinks and sources as they relate to climate change drivers. Other areas that the journal is interested in exploring are the benefits of natural gas use in terms of reducing the

production of fine particulate without producing unexpected adverse impacts, especially in countries like China, where coal use is an important source of electricity generation.

The journal will also provide a forum for discussing the development of natural gas-fired vehicles and its use in transportation. Such transportation applications will include the use of buses and fleet vehicles and personal transportation. Here, the focus will be in terms of pollutant emissions, in particular, fine particulate, NO_x, and total hydrocarbon emissions.

This also includes the development of natural gas/hydrogen mixtures, which themselves can be used for both transportation and local energy production. The journal will also entertain papers dealing with natural gas addition to heavy-duty engines firing diesel or similar fuels. A special focus will be on the development of systems that are resilient and that could allow for the greater use of hydrogen.

A final area of interest is the use of natural gas in reforming, both conventional and enhanced gas reforming, to provide hydrogen for upgrading or general use. Again, the focus will be on the developments of technologies that are environmentally benign and do not add to the global carbon burden. The journal will welcome papers that deal with novel ideas and those that deal with approaches with a high degree of technical readiness, as well as refinements to existing systems.

Short Biography of Author



Dr. Edward "Ben" J. Anthony, editor in chief for *Gases*. Dr. Anthony is an adjunct professor at the Chemical and Biological Engineering Department at the University of Ottawa. Previously, he was a professor in Energy Process Systems at Cranfield University from 2013 to 2019, and prior to that, an adjunct professor at the Chemical Engineering Department at the University of Ottawa from 2005 to 2013. Before that, he was a senior research scientist with Natural Resources Canada and led its Gasification and Fluidized Bed Combustion Group. Professor Anthony is the author of over 300 journal papers on various aspects of combustion and gasification, along with a similar number of conference papers and 15 book chapters, and he is the coeditor of the first book on pressurized fluidized beds and a new book on calcium and chemical looping. He is currently a guest professor at Southeast University in Nanjing, China, and he was a visiting professor at Imperial College, UK. He is also a fellow of the Institution of Chemical Engineers, the Royal Society of Chemistry, and the Institute of Energy and is a chartered scientist and chartered engineer. Professor Anthony also serves on the editorial board of the journal *Fuel and Fuel Processing Technology*, and he serves on the advisory board of *Greenhouse Gases: Science and Technology* and the *Journal of Natural Gas Science and Engineering*.

Conflicts of Interest: The author declares no conflict of interest.

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