Special Issue

New Insights into Photoacoustic Spectroscopy and Its Applications

Message from the Guest Editors

Photoacoustic spectroscopy (PAS), as a powerful technique in gas sensing, has attracted more attention and been applied in a broad range of applications, including atmospheric monitoring and industrial process control, due to its advantages of high sensitivity, fast response, good stability, and small gas absorption cell volume. Different photoacoustic cell structures have been reported to be capable of improving photoacoustic signal and suppressing noise to further enhance the sensor performance. PAS sensors have one unique advantage—its performance is proportional to the excitation optical power. Many methods have been investigated to build up high optical power in the PAS cell to improve the sensitivity of PAS gas detection. Various photoacoustic techniques with different acoustic transducers and PAS cell structures have been reported with ultra-high sensitivity of parts-per-trillion. The purpose of this Special Issue is to concentrate on new developments in photoacoustic sensors with novel acoustic transducers, as well as novel PAS cell structures developed for various applications including atmospheric monitoring and industrial process control.

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Message from the Editor-in-Chief

Continued developments in instrumentation and modeling have driven atmospheric science to become increasingly more complex with a deeper understanding of concepts, mechanisms, and interactions. This is the field that innovation built and it has led to a better appreciation for the complexity with atmosphere. Human life is intertwined in this complexity as we strive to better understand our atmosphere. Climate change is constantly stretching the limits of our thinking and forcing new ideas and concepts to be played out. Welcome to the Anthropocene!

Editor-in-Chief

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