**Atmospheric gas sensing through Terahertz Continuous Wave Spectroscopy**

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Volatile organic compounds (VOCs), produced by natural and anthropogenic processes, are considered contaminants of the air-quality. Due to their high volatility and toxicity, the detection of VOCs for the monitoring of the air-quality is a topical issue. Motivated by that, various conventional and innovative methodological approaches are proposed, including optical analytical techniques based on using Terahertz (THz) radiation.

In this work, we characterized the pure optical response of five VOCs in their gaseous phases (methanol, ethanol, isopropanol, 1-butanol and 2-butanol), determining their molar absorption coefficient in the spectral region (0.06-1.2) THz. In particular, to our knowledge, 1-butanol and 2-butanol are characterized in the THz spectrum in the gaseous phase for the first time.