

UV-LIGHT MODULATED GAS SENSING

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Gas sensing is a rapidly developing technology, applied in security systems and medical diagnosis to detect exhaled volatile organic compounds of low concentrations. Popular sensors are resistive gas sensors, made of metal oxides (e.g., SnO₂, WO₃, TiO₂) and operating at elevated temperatures. Some materials (e.g., WO₃, TiO₂) exhibit a photocatalytic effect and can be modulated by UV light. The modulation enhances information about ambient and helps to detect various gases. Moreover, we can apply selected UV wavelengths irradiating the gas sensing layers of different morphology but the same material composition to strengthen the efficiency of gas detection.

In this talk, recent results of gas sensing enhanced by UV light are presented. We discuss the supposed development of the proposed measurement technique and applied detection algorithm. We consider the possibility of detecting components of the gas mixture by using a single resistive gas sensor. Moreover, we present the results of gas sensing at UV irradiation by two-dimensional materials (e.g., graphene) exhibiting significant gas sensitivity due to an extremely surface to volume ratio.