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Gas sensing materials roadmap

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Abstract:
Gas sensor technology is widely utilized in various areas ranging from home security, environment and air pollution, to industrial production. It also hold great promise in non-invasive exhaled breath detection and an essential device in future internet of things. The past decade has witnessed giant advance in both fundamental research and industrial development of gas sensors, yet current efforts are being explored to achieve better selectivity, higher sensitivity and lower power consumption. The sensing layer in gas sensors have attracted dominant attention in the past research. In addition to the conventional metal oxide semiconductors, emerging nanocomposites and graphene-like two-dimensional materials also have drawn considerable research interest. This inspires us to organize this comprehensive 2020 gas sensing materials roadmap to discuss the current status, state-of-the-art progress, and present and future challenges in various materials that is potentially useful for gas sensors.