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## ABSTRACT BOOK

## Operando studies of toxic gas sensors using Near Ambient Pressure (NAP) XPS

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Semiconductors (SMO) Gas sensors materials for NO, NO<sub>2</sub>, NH<sub>3</sub>, CO, CO<sub>2</sub>, SO<sub>2</sub>, H<sub>2</sub>S, etc., are receiving significant attention because of their important applications in numerous areas such as environmental monitoring in industry and residential areas, disease diagnosis, agriculture, industrial wastes, food quality monitoring, security at home or the workplace. The overall conductivity of SMO gas sensors depends on the charge transfer mechanism between adsorbed gaseous species and semiconductor metal oxides and the gas-surface reaction. This study aims to better understand the gas sensing mechanisms of semiconducting metal oxides materials such as WO<sub>3</sub> and ZnO using the NAP-XPS technique under operando conditions. To thoroughly understand the mechanism of gas detection, it is crucial to characterize the surface composition and the material electronic structure during the exposure of the material to target gases.

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### Keywords:

Gas sensors mechanism, electronic structure, NAP-XPS