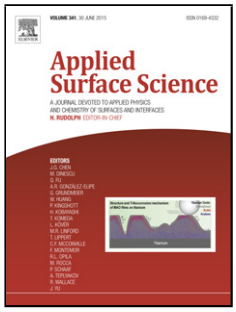

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Non-covalently anchored multi-walled carbon nanotubes with hexa-decafluorinated zinc phthalocyanine as ppb level chemiresistive chlorine sensor

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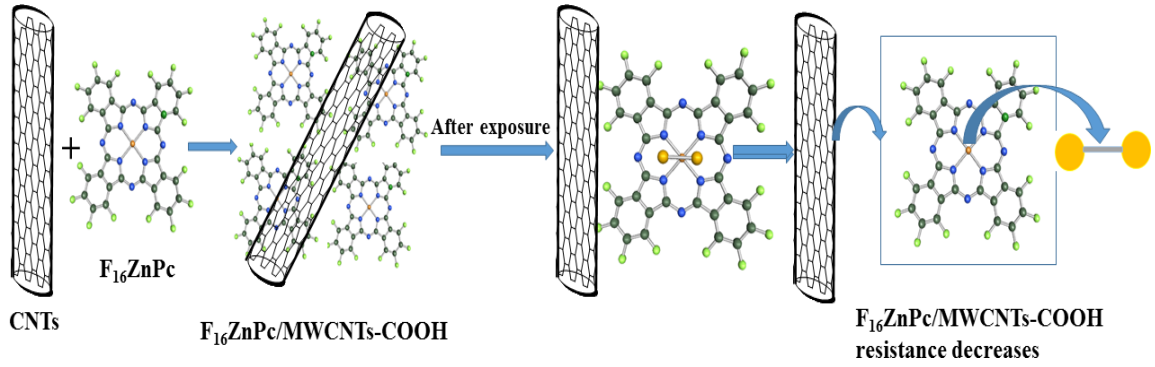
Graphical Abstract



Highlights

1. Fabrication of highly sensitive and selective ppb level CNTs based chemiresistive Cl_2 sensor using F_{16}ZnPc/MWCNTs-COOH hybrids.

2. F_{16}ZnPc molecules are non-covalently attached onto CNTs through π–π stacking.

3. F_{16}ZnPc/MWCNTs-COOH sensor shows high sensitivity to Cl_2 with a detection limit down to 0.06 ppb with excellent baseline recovery and reversibility.

4. The underlying mechanism for the enhanced sensing performance of the sensor is discussed.