

## Ultrasensitive Organic Field Effect Transistor Sensors for Detecting Reactive Oxygen Species by Employing Nanoclay–Polyphenol Complexes

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Reactive oxygen species (ROS) have been known to damage normal cell membranes in order to regain its own stability. The damaged cells can influence the health of other cells leading to various diseases such as heart disease, hypertension, diabetes, and autoimmune diseases causing rheumatoid arthritis. ROS can be detected by fluorescence, electron spin resonance and electrochemical measurement techniques. However, these conventional methods have in principle difficulty in miniaturization and quick measurement. Nanoclays have been extensively studied in the field of polymer–based composites because of their superior mechanical properties. Interestingly, less attention has been paid to their applications for active layers in sensors for ROS and volatile organic compounds (VOCs). Our group has recently demonstrated that polyphenols act as an outstanding sensing medium in organic field–effect transistor (OFET) sensors. This presentation reports our new approaches in enhancing the ROS sensitivity of OFET sensors which consist of nanoclay–polyphenol complexes.