

## SEMICONDUCTING POLYMER DOTS L-LACTATE TRANSDUCER BY ENZYMATIC CASCADE REACTION SYSTEM

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### ABSTRACT

For this study, a sensitive fluorescent strategy for lactate detection was developed based on enzymatic cascade reaction. This ratiometric fluorescent sensor was established by continuously consuming the nicotinamide adenine dinucleotide (NADH) and oxygen which resulted in the explosion of a small amount of internal blue reference fluorescence that was originally hidden and activating the red fluorescence from platinum octaethylporphyrin (PtOEP) separately. With optimal conditions, including the concentration of NADH, semiconducting polymer dots (Pdots), lactate oxidase (Lox), and lactate dehydrogenase (LDH), reaction time, and pH, this method has a linear detection range from 0.5 nM to 5.0  $\mu$ M and 5.0  $\mu$ M to 50.0  $\mu$ M for lactate, with a limit of detection of 0.18 nM. Finally, the method showed good detection performance of lactate in plasma samples, indicating its potential wide-spread usage for the selective analysis of lactate.