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# Modified nanoporous titanium dioxide as a novel carrier for enzyme immobilization

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## Abstract

$\epsilon$ -Poly-L-lysine (EPL)-modified mesoporous titanium dioxide (M-TiO<sub>2</sub>) was assembled through the electrostatic attraction between EPL and M-TiO<sub>2</sub>. Through modification, the M-TiO<sub>2</sub> surface tends to form multilayered and complex architectures, which can be used as artificial matrices to change the microenvironment of carriers for enzyme immobilization. The modified M-TiO<sub>2</sub> was characterized through scanning electron microscopy, Fourier transform infrared spectroscopy, zeta potential analysis, and thermogravimetric analysis. All of the immobilized enzymes with negative charges display strong storage stability, thermal stability, and good reusability. Results indicate that EPL can self-assemble onto the surface of M-TiO<sub>2</sub> and form a considerable number of active coatings. Our results also demonstrate that

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