

Preparation and specific adsorption of dual antibacterial BSA surface imprinted GO-PEI/MXene wrinkled microspheres

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Abstract

Molecular imprinting technology has gained increasing attention and application in protein adsorption and separation. Bacterial growth on the imprinted material would reduce the adsorption selectivity of the imprinted cavity, contaminate the isolation products and shorten the service life of the material. To solve the above problems, carrier materials with dual antibacterial ability are constructed for the first time and novel surface protein imprinted microspheres (GO-PEI/MXene@MIPs) are manufactured. Thanks to the large exterior surface area, the saturation adsorption amount of GO-PEI/MXene@MIPs reaches 312.63 mg/g with an imprinting factor (IF) value of 3.16 within 90 min. Meanwhile, this imprinted material also exhibits a high ability to separate real samples as well as reusability. In addition, this material has excellent broad-spectrum antibacterial effects, which will significantly extend its service life in real-world environments. This study provides a feasible solution for the application of surface protein imprinted materials in real-world environments.

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