総 説 論 文

モノクローナル抗体を用いたセンシング・触媒システム

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Sensing and Catalytic Systems with Monoclonal Antibodies

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The immune system has an ability to generate antibodies against virtually any molecule of interest. Recently, much attention has been directed toward antibodies not only in the field of biology but also in the field of chemistry because of their unique structures and functions. Antibodies, immunoglobulins, have been studied as sensors, diagnostics, DDS, catalysts, and components for nanotechnology. We have focused our attention on the special behavior of antibodies, especially monoclonal antibodies, because they can recognize a larger and complex compound with high specificity. We have prepared monoclonal antibodies for various compounds such as optically active substances and transition-metal complexes. This review shows that molecular recognition ability of monoclonal antibodies can be applied to construct functionalized sensing and catalytic systems.

Keywords : Monoclonal antibody, Molecular recognition, Specificity, Chiral separation, Biosensor, Asymmetric Catalyst, Energy conversion