

Switchable cholesterol recognition system with Diels–Alder reaction using molecular imprinting technique on self-assembled monolayer

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Molecular imprinting was conducted using a method to form a polymeric coating on a self-assembled monolayer (SAM). This molecular imprinting system was able to obtain an on-off function using the Diels–Alder reaction. Cholesterol was used as a target compound and the SAM was formed using thiol compound on a gold plate. Epoxy resin was used to form the polymeric coating. Covalent bonding method was used in molecular imprinting. The formed molecular imprinting system recognized cholesterol better than analogs of cholesterol. Epoxy resin curing agent with furan group was synthesized to form the molecular imprinting system. Using the Diels–Alder reaction between the furan group and phenylmaleimide, this molecular imprinting system offers a switchable function.