

# Molecularly Imprinted Organic/Inorganic Hybrid Materials Capable of Protein Recognition Prepared by Liquid Phase Deposition

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Molecularly imprinted organic/inorganic hybrid materials have been prepared for the recognition of proteins by using liquid-phase-deposition (LPD), a wet process for the preparation of metal oxide films. Therein, protein-polyion compound adducts were formed electrostatically in the titanium oxide-LPD treatment solution and were co-deposited with titanium oxide onto a gold substrate during the LPD process. After the removal of the proteins, protein-imprinted organic/inorganic hybrid thin films were obtained. As a reference, a non-imprinted film was also prepared without the addition of proteins. In addition, the chips prepared without polyion compounds were prepared in the presence and absence of proteins.

The binding studies were conducted to measure the binding activity for proteins by surface plasmon resonance measurements. Only when both polyion compounds and proteins were added to the LPD, the obtained imprinted films showed high selectivity for the template proteins. It is also found that appropriate ratio of the polyion compounds in the complexation process could keep native structure of the proteins, under which LPD process was employed. These results reveal that molecularly imprinted organic/inorganic hybrid materials prepared by LPD is a new versatile technology, where various molecularly imprinted organic/inorganic hybrid materials can be prepared by simply mixing diverse range of organic polyion compounds with the LPD treatment solution capable of interacting with target proteins.

## References

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