Abstract Submitted
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Sensitive and selective protein detection by a molecular imprint nanosensor[1] D. CAI[2], L. REN, H.Z. ZHAO, C.J. XU, Y. YU, H.Z. WANG, Y.C. LAN, Boston College, D. WAGNER, Dept of Navy, M.J. NAUGHTON, Z.F. REN, T.C. CHILES, Boston College — It has been more than thirty years since the first report of the molecular imprint technique. However the progress towards imprint-based protein sensing has been fairly slow. Here, we report a significant advance on sensitivity and selectivity of imprint technique for protein detection: 1e4 times more sensitive than the state of the art. The lowest detectable human ferritin concentration was 10 pg/L by measuring the capacitance and resistance change in the sensor. Robust selectivity was demonstrated using other proteins, binary samples, and cellular protein extracts. Evaluation with calmodulin revealed that protein conformational changes could be detected. The molecular imprinting component of the nanosensor affords detection of a range of molecules, including macromolecules in a label-free manner and should prove useful in those instances where antibodies, aptamer, or natural ligands are not available.

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