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Title: A Sandwich Boronate Affinity Sorbent Assay for Glucose Detection Facilitated by Boronic Acid-Terminated Fluorescent Polymers

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1 **A Sandwich Boronate Affinity Sorbent Assay for Glucose**
2 **Detection Facilitated by Boronic Acid-Terminated**
3 **Fluorescent Polymers**

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12 **ABSTRACT:**

13 Glucose monitoring is very important in clinical diagnosis, control and therapy of diabetes.
14 Fluorescent methods based on boronate affinity recognition have attracted much attention in recent
15 years. However, severe interferences from endogenous fluorophores or quenchers in samples are
16 big concerns. In this work, a boronic acid terminated fluorescent polymer with multiple repeated
17 fluorogens was synthesized by copolymerization of a fluorescent monomer [9-anthracenemethyl
18 acrylate (9-AnMA)] and methyl methacrylate (MMA) via atom transfer radical polymerization
19 (ATRP), and a sandwich boronate affinity sorbent assay (SBASA) for selective and ultrasensitive
20 detection of glucose was developed for the first time based on the distinguished feature of glucose
21 which can form a bidentate glucose–boronic complex, using the fluorescent polymer for signal
22 amplification. The proposed method could avoid the effects from typical interfering substances.
23 Compared with previously reported methods, the SBASA has higher selectivity, wider linear range
24 (0.003 to 3.0 mM) and higher sensitivity (a detection limit of 0.8 μM). Moreover, the developed
25 method was successfully applied to the detection of glucose in human serum samples. The simple,
26 rapid, convenient, and reliable SBASA provided a new concept and an attractive idea for glucose
27 monitoring.

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