Supplementary Information:

A SPE-assisted BODIPY fluorometric paper sensor for the highly selective and sensitive determination of Cd^{2+} in complex sample: rice

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Text S1. Rice digestion procedures.

1 g of each rice sample was accurately weighed and predigested in 5 mL nitric acid (65%) overnight. The mixture was averagely introduced into 5 digestion tanks and then 11 mL of nitric acid (65%) and 1 mL of hydrogen peroxide solution (30%) were replenished into each tank. These closed vessels were immediately exposed to microwave irradiation using a MDA-6-G microwave oven (Shanghai, China) (running program was listed below). The digested solution was heated to just before dryness on a hotplate. Further evaporation after adding deionized water was also performed for 3 or 4 times to reach solution pH 5-6. The resulting solution was made up to 5 mL and purified by 0.22 μm Millipore membrane followed by C18 column.

Running program for microwave oven.

	Temperature, °C	Time, min	Power, W
1	130	15	600
2	150	10	600
3	180	50	600

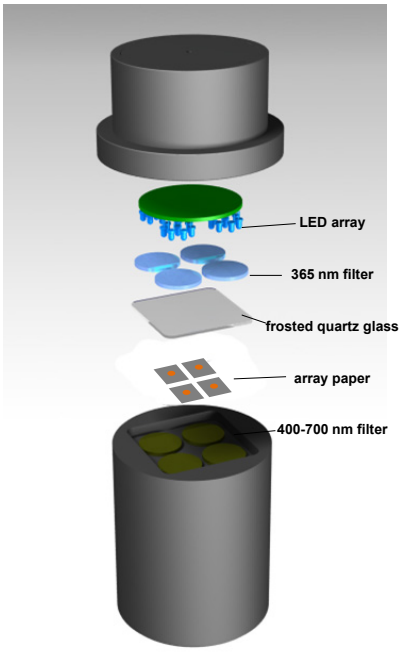


Figure S1. The schematic graph of the experimental setup.

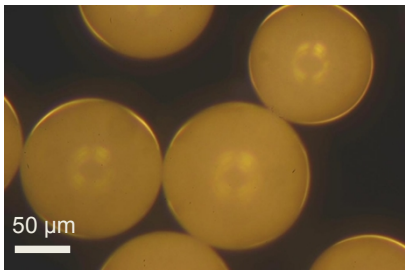


Figure S2. Optical microscope image of commercially available PS-DVB microspheres.

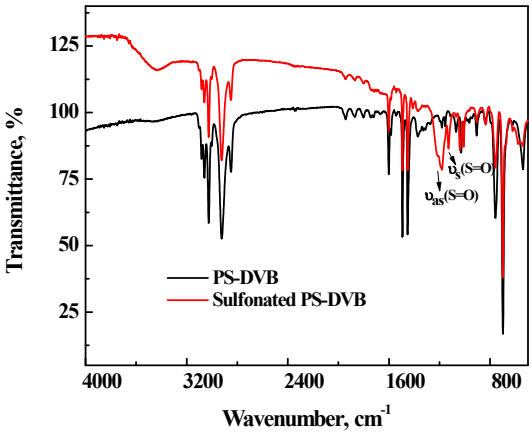
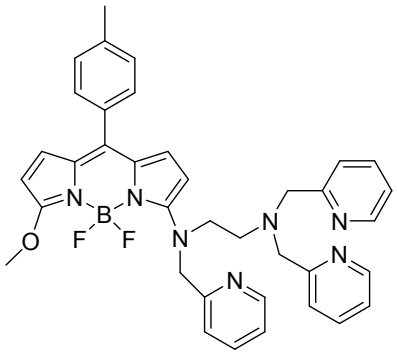


Figure S3. FTIR spectra of PS-DVB microspheres and their sulfonated forms.



^{1}H NMR (400 MHz, $CDCl_3$): δ 8.49 (m, 3H), 7.60 (m, 3H), 7.50 (d, 2H, J = 7.6 Hz), 7.36 (d, 1H, J = 8.0 Hz), 7.32 (d, 2H, J = 8.0 Hz), 7.24 (d, 2H, J = 8.0 Hz), 7.12 (m, 3H), 6.59 (d, 1H, J = 4.8 Hz), 6.40 (d, 1H, J = 4.0 Hz), 5.91 (d, 1H, J = 4.8 Hz), 5.69 (d, 1H, J = 4.0 Hz), 5.14 (s, 2H), 3.98 (s, 3H), 3.87 (m, 2H), 3.85 (s, 4H), 2.90 (t, 2H, J = 6.4 Hz), 2.43 (s, 3H). ESI-HRMS: calculated for $[M+H]^+$ 644.31215, found 644.31118.

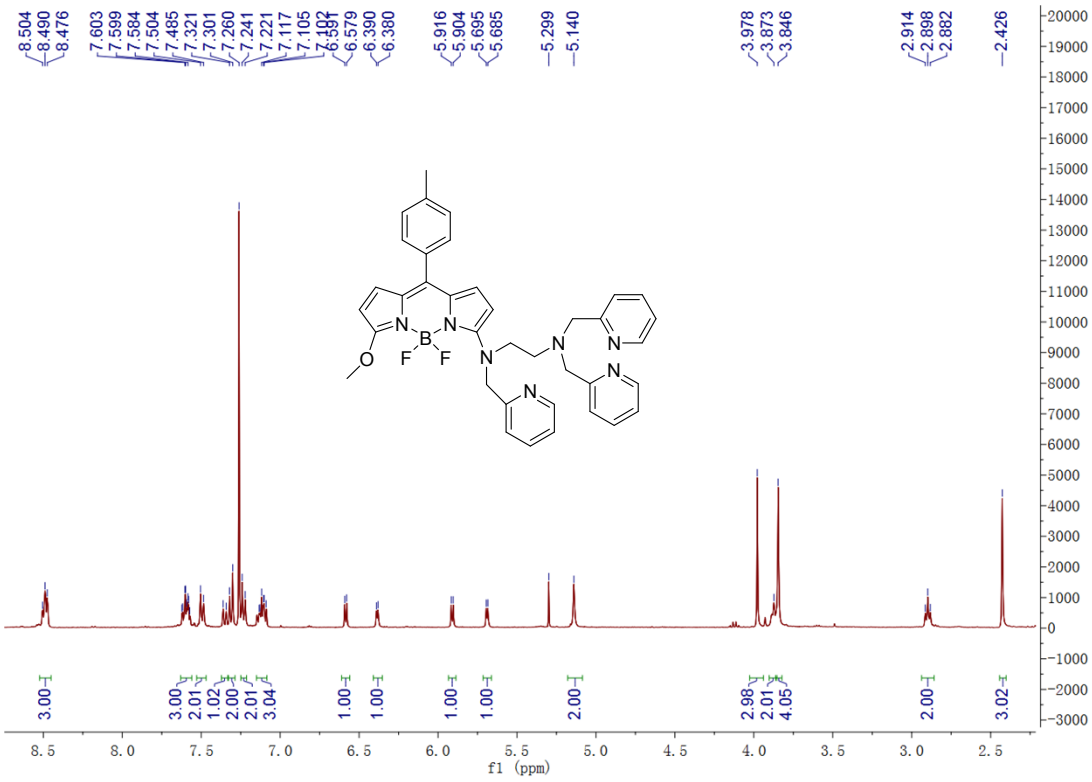


Figure S4. Chemical structure and characterization information of the synthesized indicator.

Figure S5. Constructed equipment for BODIPY-based fluorometric paper sensor.

Table S1. Metal ions concentrations (mg/Kg) in 12 digested rice samples detected by IC.

	Cu^{2+}	Ni^{2+}	Zn^{2+}	Cd^{2+}	Mn^{2+}	Na^{+}	K^{+}	Mg^{2+}	Ca^{2+}
1#	1.18	n.d[a]	9.75	n.d.	5.82	49.41	451.82	141.77	254.65
2#	3.87	0.50	4.52	n.d.	3.16	47.72	251.07	82.17	104.92
3#	1.40	n.d	2.81	n.d.	3.20	17.65	280.89	78.82	68.44
4#	1.14	n.d	6.70	n.d.	5.64	52.89	531.50	202.57	146.05
5#	3.22	1.92	3.31	n.d.	3.55	106.92	791.19	176.93	147.71
6#	0.57	n.d	2.07	n.d.	0.73	60.92	1184.06	321.80	353.05
7#	2.04	n.d	16.42	n.d.	7.38	60.99	1096.06	381.64	420.62
8#	1.04	n.d	3.60	n.d.	2.82	35.35	470.98	107.60	118.07
9#	2.17	2.58	14.45	n.d.	7.35	25.00	182.95	99.97	245.80
10#	1.68	8.74	n.d	n.d.	1.66	68.72	1065.29	419.14	180.29
11#	0.39	n.d	n.d	n.d.	2.53	123.67	1414.16	1188.34	1093.68
12#	0.54	0.91	14.89	n.d.	9.91	30.78	584.40	247.36	149.60
Mean	1.60	1.22	6.54	n.d.	4.48	56.67	692.03	287.34	273.57

[a] n.d. means not detected.

Table S2. Instrument parameters of ICP-MS for Cd^{2+} determination.

Parameter	Value
Plasma gas flow rate, L/min	15
Auxiliary gas flow rate, L/min	0.2
Nebulizer gas flow rate, L/min	0.8
Plasma power, W	1300
Sample flow rate, L/min	1.5
Analysis time, min	4.6