

## Supporting Information

### **Direct analysis in real time coupled with quadrupole-Orbitrap high-resolution mass spectrometry for rapid analysis of pyrethroid preservatives in wooden food contact materials**

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## Table of Contents

### Supplementary Tables:

Table S1: Basic information of pyrethroid preservatives and the internal standard *trans*-cypermethrin- $d_6$

Table S2: Mean recoveries of the proposed method ( $n = 3$ )

### Supplementary Figures:

Figure S1: Optimization of the type of working gas (a), gas temperature (b), and DART grid electrode voltage (c)

Figure S2: Comparison of recovery with acetonitrile, acetone, acetonitrile/acetone (1:1, v/v), *n*-hexane/acetone (1:1, v/v), ethyl acetate, and *n*-hexane as the extraction solvents ( $n = 3$ ).

Figure S3: Comparison of recovery using  $C_{18}$  and PSA with different combination (5 mg + 5 mg, 5 mg + 10 mg, 5 mg + 15 mg, 10 mg + 5 mg, 10 mg + 10 mg, and 10 mg + 15 mg) as the purification sorbents.

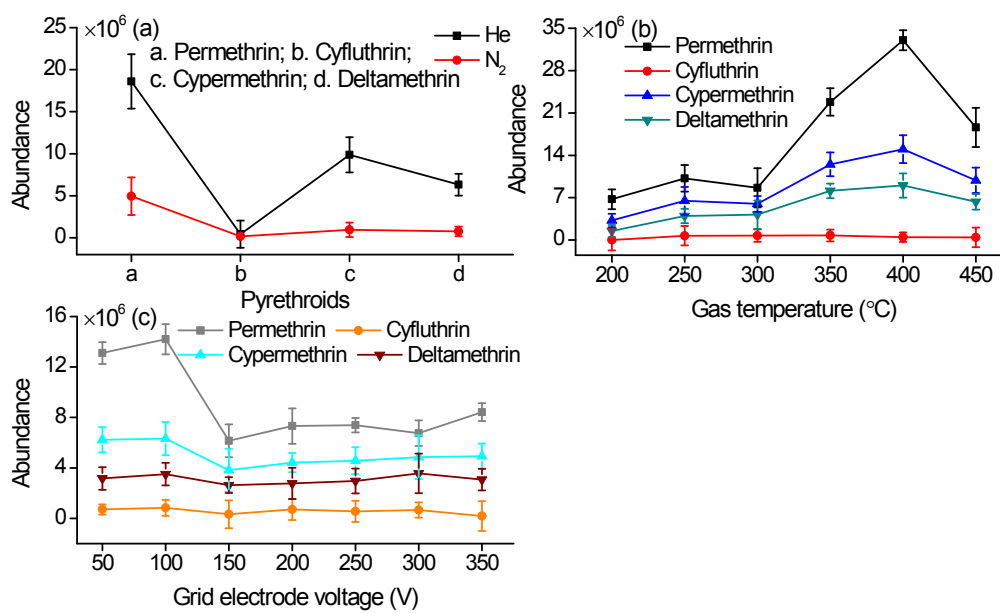
Figure S4: The extracted ion chromatograms of five consecutive tests for permethrin (500 ng mL<sup>-1</sup>). Peak areas were labelled on the top.

**Table S1.** Basic information of pyrethroid preservatives and the internal standard *trans*-cypermethrin-*d*<sub>6</sub>

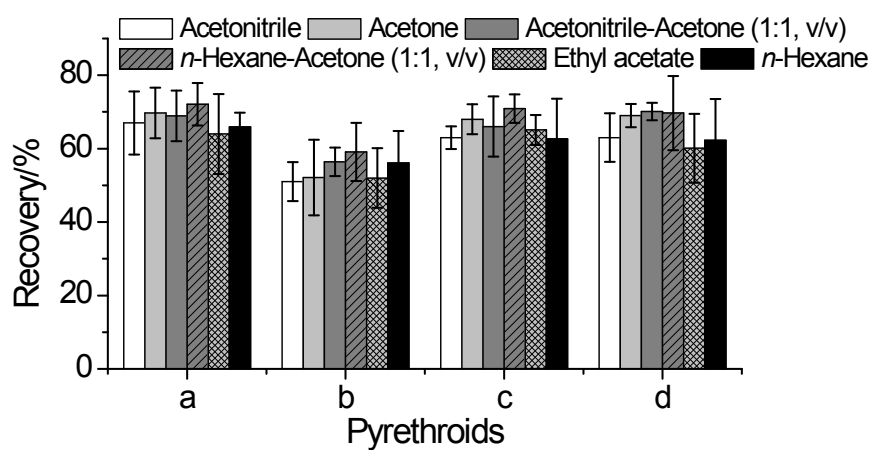
| Compound  | Formula  | CAS        | Mw    | LogK <sub>ow</sub> |
|---|--|------------|-------|--------------------|
| Permethrin  | C <sub>21</sub> H <sub>20</sub> Cl <sub>2</sub> O <sub>3</sub>                 | 52645-53-1 | 390.1 | 7.15               |
| Cyfluthrin  | C <sub>22</sub> H <sub>18</sub> Cl <sub>2</sub> FNO <sub>3</sub>               | 68359-37-5 | 433.1 | 6.29               |
| Cypermethrin                                      | C <sub>22</sub> H <sub>19</sub> Cl <sub>2</sub> NO <sub>3</sub>                | 52315-07-8 | 415.1 | 6.27               |
| Deltamethrin                                      | C <sub>22</sub> H <sub>19</sub> Br <sub>2</sub> NO <sub>3</sub>                | 52918-63-5 | 503.0 | 6.20               |
| <i>trans</i> -Cypermethrin- <i>d</i> <sub>6</sub> | C <sub>22</sub> H <sub>13</sub> D <sub>6</sub> Cl <sub>2</sub> NO <sub>3</sub> | 82523-65-7 | 421.1 | 6.27               |

**Table S2.** Mean recoveries of the proposed method ( $n = 3$ )

| PYRs         | Spiked level (mg kg <sup>-1</sup> , $n = 3$ ) | Recovery (%) | RSD (%) |
|--------------|---|--------------|---------|
| Permethrin   | 0.10  | 78.6         | 9.6     |
|              | 0.20  | 81.3         | 7.9     |
|              | 0.50  | 72.1         | 6.3     |
| Cyfluthrin   | 0.22  | 77.1         | 10.7    |
|              | 0.44  | 78.2         | 10.4    |
|              | 1.10  | 76.6         | 11.8    |
| Cypermethrin | 0.26  | 81.1         | 8.9     |
|              | 0.52  | 77.4         | 6.2     |
|              | 1.30  | 82.7         | 7.6     |
| Deltamethrin | 0.50  | 74.4         | 5.2     |
|              | 1.00  | 75.1         | 8.1     |
|              | 2.50  | 79.6         | 9.3     |

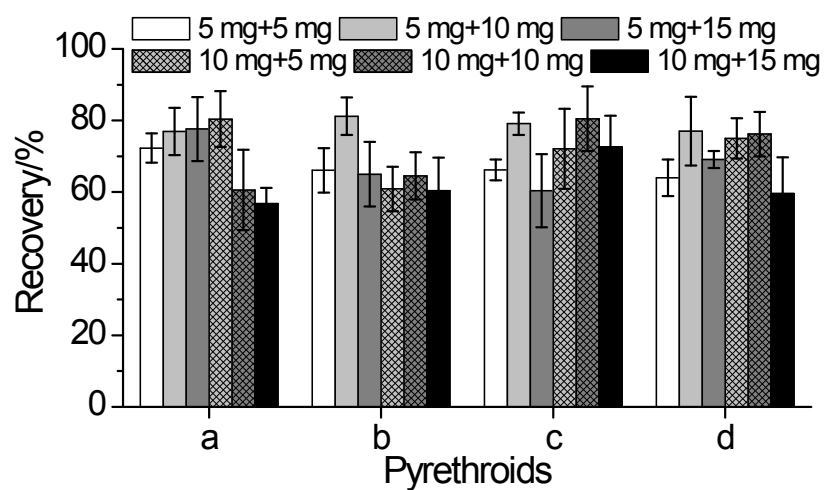


**Figure S1.** Optimization of the type of working gas (a), gas temperature (b), and DART grid electrode voltage (c)



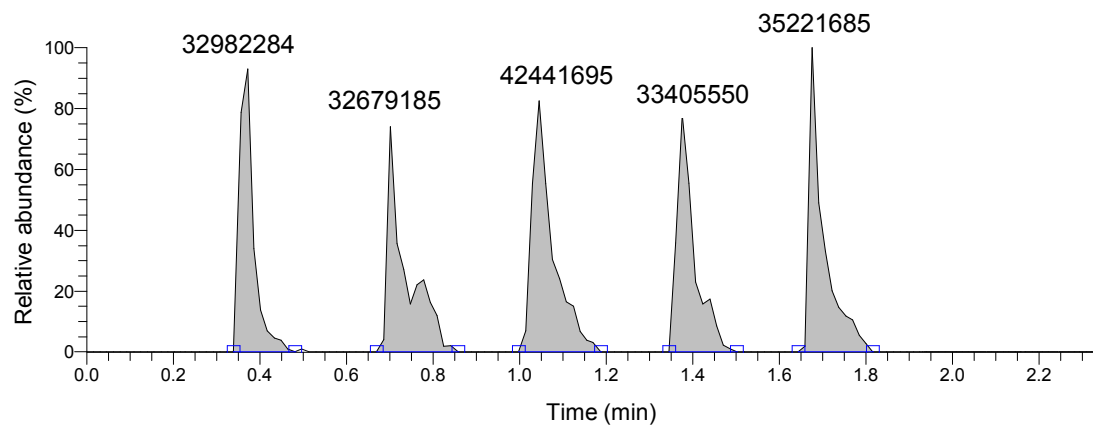
**Figure S2.** Comparison of recovery with acetonitrile, acetone, acetonitrile/acetone (1:1, v/v), *n*-hexane/acetone (1:1, v/v), ethyl acetate, and *n*-hexane as the extraction solvents ( $n = 3$ ).

a: permethrin; b: cyfluthrin; c: cypermethrin; d: deltamethrin.



**Figure S3.** Comparison of recovery using C<sub>18</sub> and PSA with different combination (5 mg + 5 mg, 5 mg +10 mg, 5 mg +15 mg, 10 mg + 5 mg, 10 mg + 10 mg, and 10 mg + 15 mg) as the purification sorbents.

a: permethrin; b: cyfluthrin; c: cypermethrin; d: deltamethrin.



**Fig. S4** The extracted ion chromatograms of five consecutive tests for permethrin ( $500 \text{ ng mL}^{-1}$ ). Peak areas were labelled on the top.