We thank the reviewer for his careful review of the manuscript. The comments greatly improved our manuscript. We revised our manuscript according to the reviewer's comments and suggestions. We did another breakthrough experiment by sampling two Tenax TA tubes in series.

**Response to referee #3:**

I do appreciate the time and the effort that the authors put into both revising the manuscript and replying to the comments from myself and other reviewers. The authors have sufficiently addressed most of my comments. In particular, the additional information presented in the new Figures S5, S10, and S11 is helpful.

We thank the reviewer for his careful review of the manuscript. Here is our point-to-point response.

I only have some concerns regarding Figure S2 about the breakthrough of the adsorbent tubes:

1. There are two "blue" figures referenced in the caption of Figure S2. One should be "black". Please correct the error.

Figure S2 has been replaced by chromatograms with two tubes sampled in series. Please refer to the updated Figure S2.

2. Comparing the bottom chromatogram to others ("black", "pink", and "blue"), I can actually see some differences (e.g., at 15-20 min and at 30-35 min). Can the authors show the differences between the normalized chromatograms of 24 h/48 h/72 h and that of 6 h?

Figure S2 has been replaced by chromatograms with two tubes sampled in series. Please refer to the updated Figure S2.

3. With regard to "breakthrough", I have a different understanding from the authors. Breakthrough of a specific analyte indicates the tube adsorption capacity (not strength) of the analyte, which varies from compound to compound and depends on sorbent-sorbate affinity.

Breakthrough can be normally examined by sampling with two adsorbent tubes (one sample tube + one backup tube) in series. After sampling, the two tubes should be analyzed in the same manner. If the mass of the analyte on the backup tube is at least a few percentages (e.g., >5%) of the mass on the front sampling tube, it indicates that the breakthrough of the analyte has occurred and the adsorption for the analyte on the front tube has reached saturation under the studied sampling

conditions (e.g., 15-30 min, 0.5 L min-1).

Thank you for your comments. We have deleted the previous Figure S2 and did another breakthrough experiment.

The manuscript was revised as follows.

A Tenax TA breakthrough experiment was conducted by sampling two adsorbent tubes in series. We sampled the first tube (sample tube) and the second tube (backup tube) simultaneously with a sampling time of 24h. No breakthrough was observed after 24h sampling (Figure S2). The total intensity of cooking emission chromatograms ($3.05 \times 10^9 - 14.17 \times 10^9$) falls in the range of the sample tube ($9.84 \times 10^9$), which was much higher than the intensity of the backup tube ($2.12 \times 10^9$) and the blank tube ($1.33 \times 10^9$, Figure S1). After subtracting the volume of the blank tube, the volume of the backup tube is less than 10% of the sample tube, indicating the breakthrough effect of the Tenax TA tubes could be neglected.

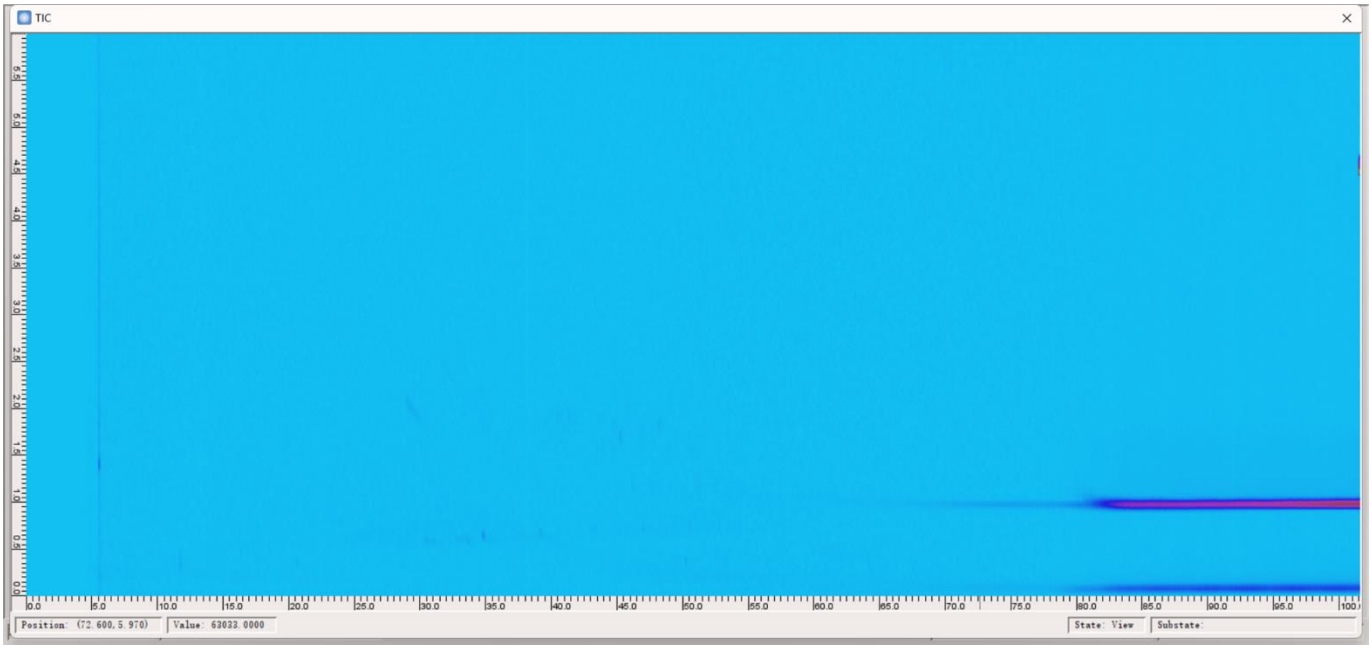


Figure S1. A typical chromatogram of system blank.

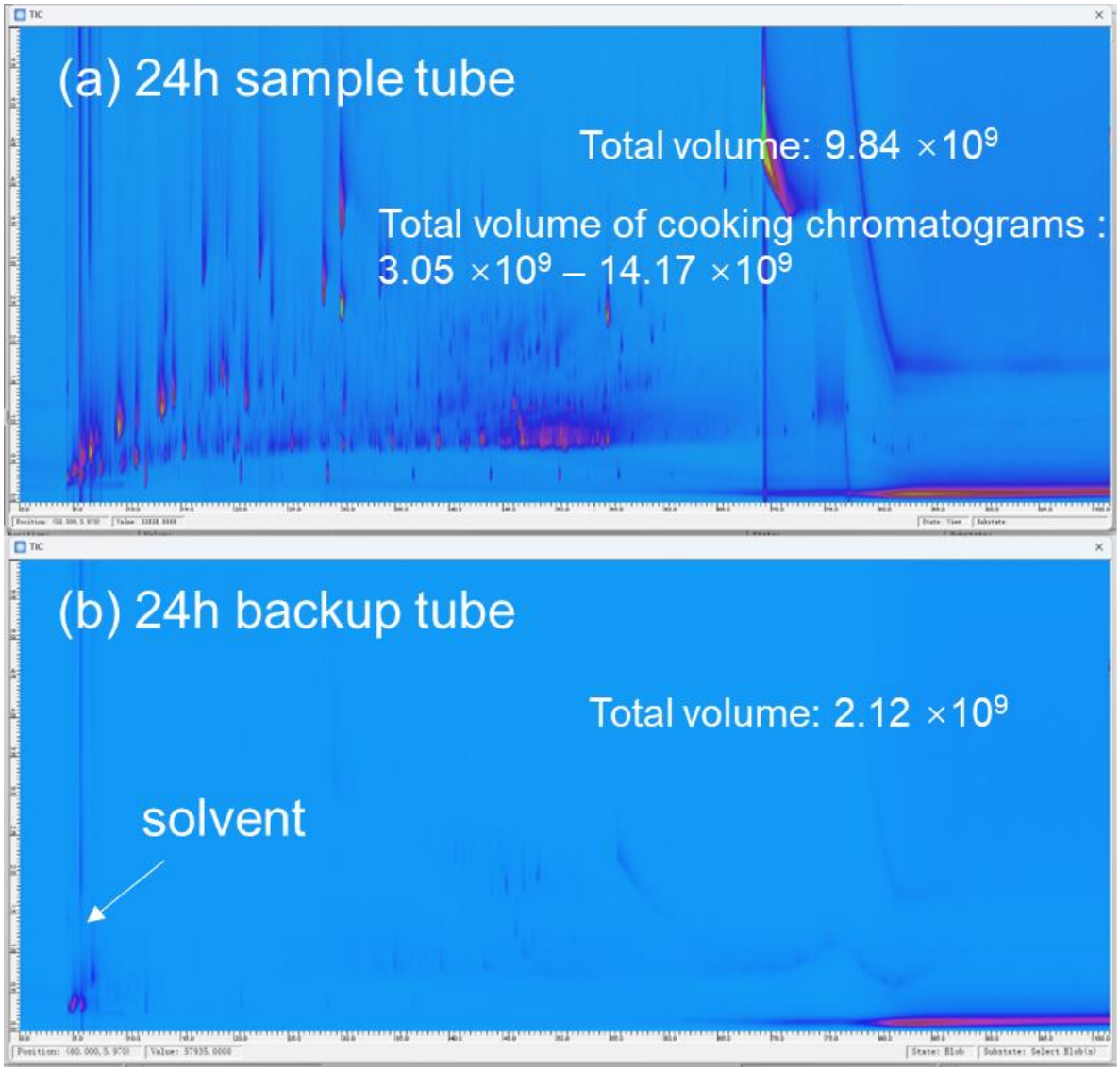


Figure S2. The chromatograms of the breakthrough experiment. (a) is the chromatogram of the sample tube, while (b) is the chromatogram of the backup tube. The sampling flow is set to be 0.5 L $min^{-1}$. No significant breakthrough was observed within 24 h (<1% for each compound). The total volume of cooking emission chromatograms ($3.05 \times 10^9 - 14.17 \times 10^9$) falls in the range of the sample tube ($9.84 \times 10^9$) and is much higher than the volume of the backup tube ($2.12 \times 10^9$). The volume of the backup tube ($2.12 \times 10^9$) is close to the volume of the blank tube ($1.33 \times 10^9$, Figure S1). After subtracting the volume of the blank tube, the volume of the backup tube is less than 10% of the sample tube, indicating the breakthrough effect of the Tenax TA tubes could be neglected.