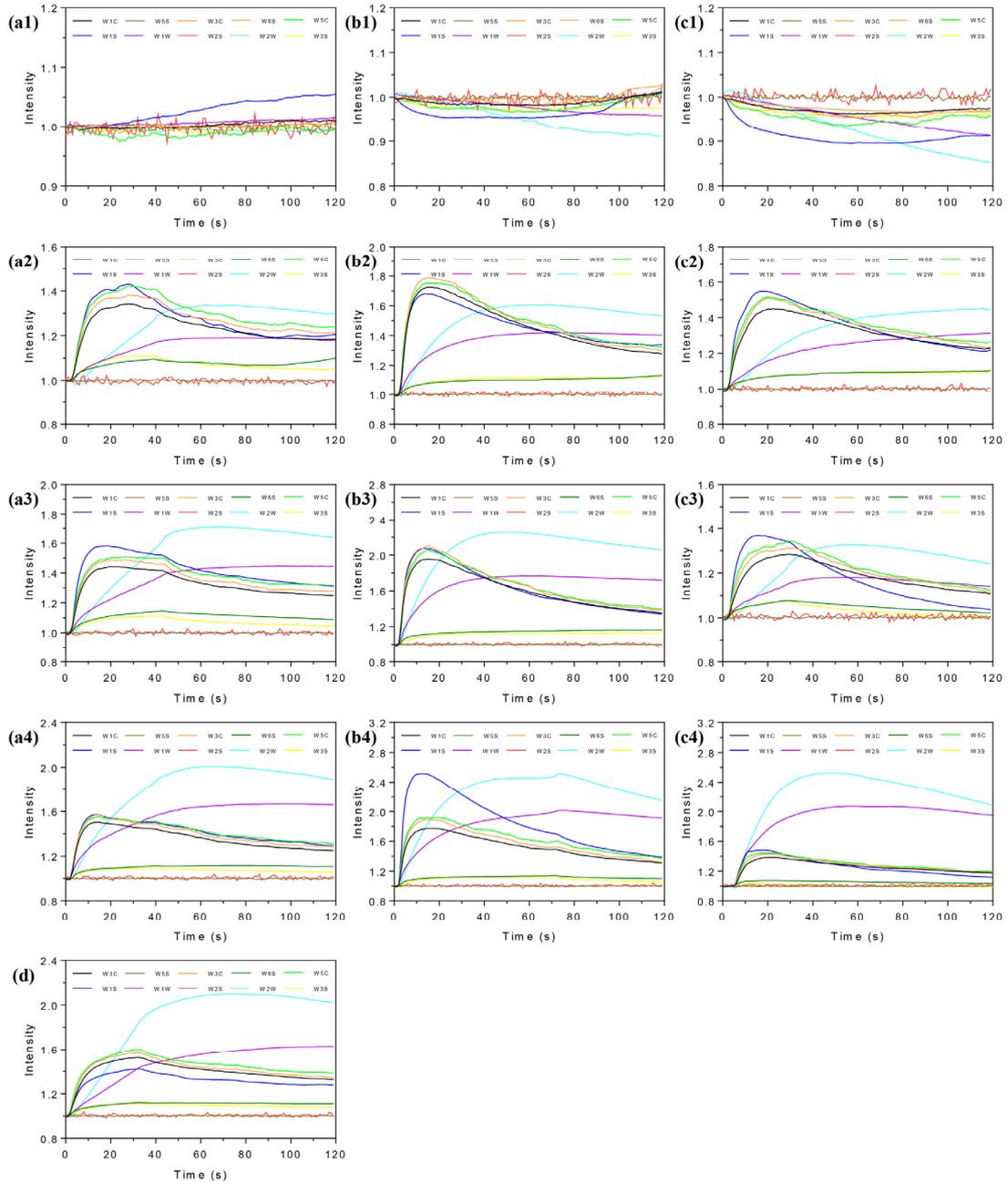


Supplemental Materials

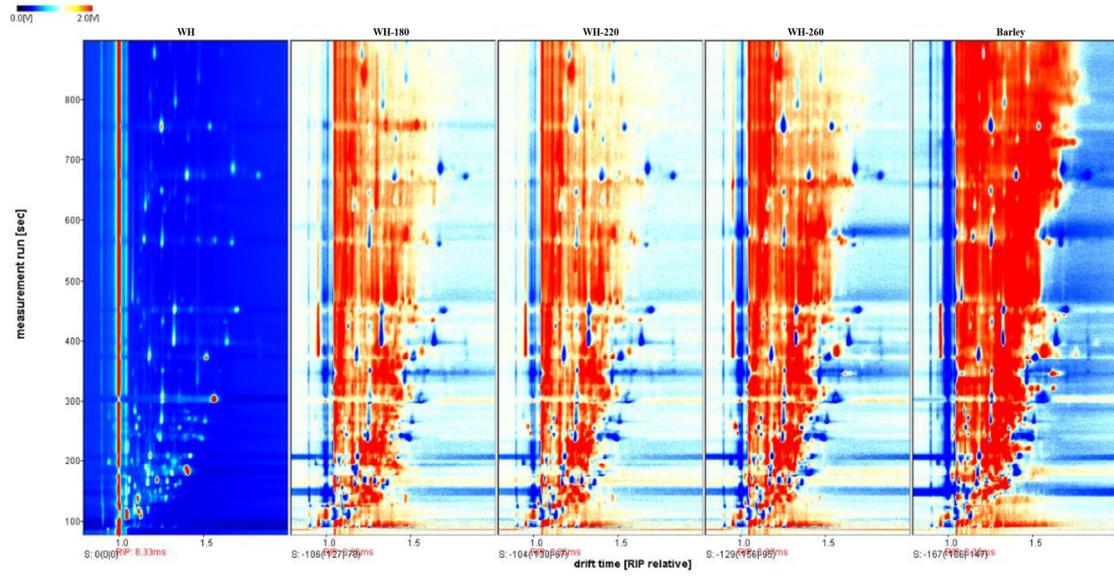


F

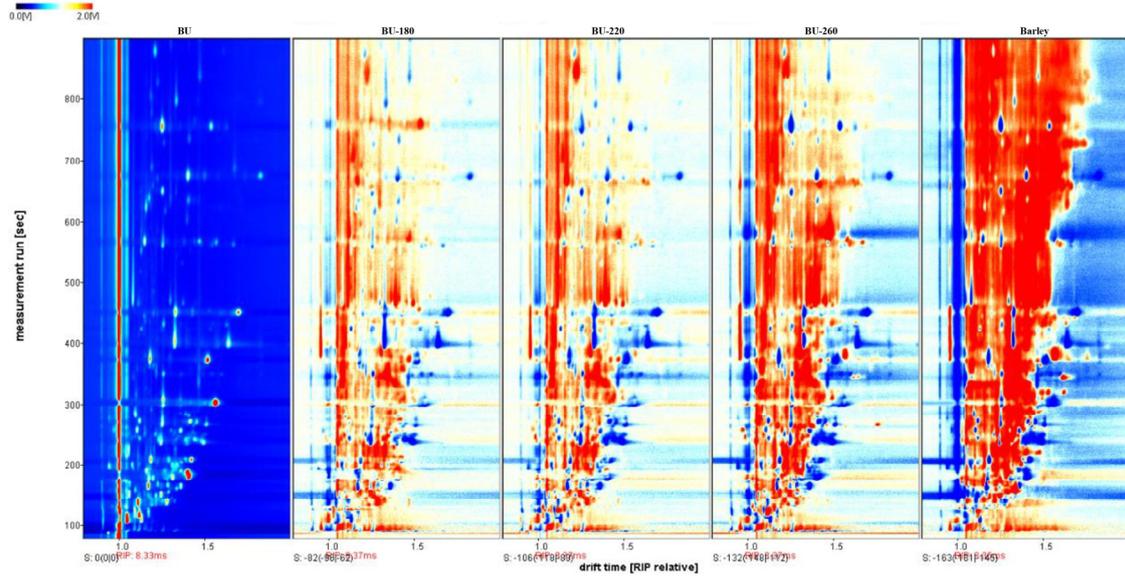
Figure S1 Ten sensors' responses to the aromas attributed by the E-nose in the raw and CHB roasted at different temperatures. a (white): a1 (0.0 °C); a2 (180.0 °C); a3 (220.0 °C); a4 (260.0 °C). b (blue):

b1 (0.0 °C); b2 (180.0 °C); b3 (220.0 °C); b4 (260.0 °C). c (black): c1 (0.0 °C); c2 (180.0 °C); c3 (220.0 °C); c4 (260.0 °C). d: commercial roasted barley.

a



b



c

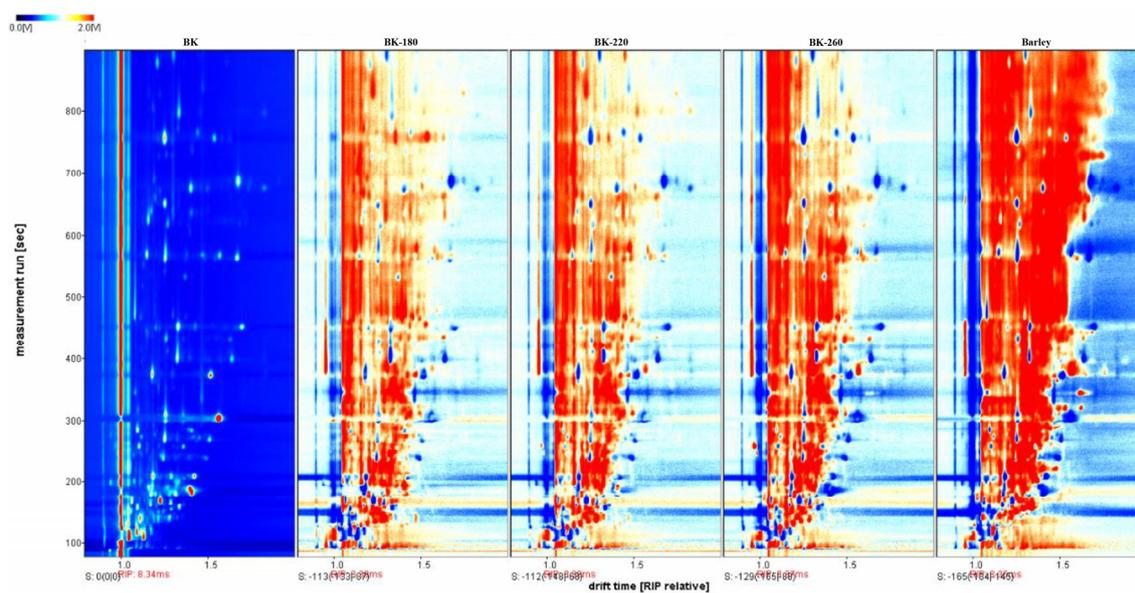


Figure S2 HS-GC-IMS topographic plots for the raw and CHB roasted at different temperatures. a: white cultivar; b: blue cultivar; c: black cultivar. Commercial roasted barley was set as the control.

Tables

Table S1 The main applications of sensors in PEN3.

Numbers	Sensor name	Substances for sensing	Reference
1	W1C	Aromatic compounds	Toluene, 10 ppm
2	W5S	Nitrogen oxides	NO ₂ , 1 ppm
3	W3C	Ammonia, Aromatic compounds	Benzene, 10 ppm
4	W6S	Hydrogen	H ₂ , 100 ppb
5	W5C	Alkanes, Less polar compounds	Propane, 1 ppm
6	W1S	Sensitive to methane (environment) <i>ca.</i> 10 ppm, Broad range, similar to No.8	CH ₄ , 100 ppm
7	W1W	Sulfur compounds, H ₂ S 0.1 ppm, Terpenes, Sulfur organic compounds	H ₂ S, 1 ppm
8	W2S	Alcohols, Partially aromatic compounds, Broad range	CO, 100 ppm
9	W2W	Aromatic compounds, Sulfur organic compounds	H ₂ S, 1 ppm
10	W3S	Methane at high concentrations > 100 ppm, Sometimes very selective	CH ₄ , 10CH ₄ , 100 ppm