OPTOSKY Spectroscopy Solutions

Datasheet

Raman Edible Oils Analyzer ATR7010EO

Features

- Quantitative detection: The adulteration content (0% ~ 100%) of edible oil can be quantitatively detected.
- Safety and environmental protection: No need to conduct complex chemical experiments and analysis to improve safety;
- High sensitivity: Using high-sensitivity refrigeration CCD, it can detect the adulteration of low-adulterated edible oils;
- Strong applicability: The instrument is designed to detect adulteration of edible oils such as camellia oil, soybean oil, and olive oil;
- One-click analysis: Powerful, user-friendly spectral analysis software, one-click operation

Application

- Camellia oil analysis
- Soybean oil analysis
- olive oil analysis
- Corn oil analysis
- peanut oil analysis
- Sunflower seed oil analysis
- rapeseed oil analysis

Description

ATR7010EO is a Raman-based edible oil adulteration analyzer that can quantitatively detect the adulteration content of edible oil. It can be used in the R&D design, process development and production of edible oil companies. By detecting the Raman spectrum of edible oil and conducting quantitative analysis, it can help users test the adulteration concentration and determine the key parameters and proportions of adulteration of edible oil products. Improve the quality of edible oil products and achieve efficient, safe and stable scale-up production of enterprises.

ATR7010EO is a Raman spectrometer newly developed and launched by Optosky in response to the market demand for edible oil adulteration detection. It uses a refrigerated high-sensitivity CCD, which makes the instrument have good environmental adaptability and can be customized according to the actual situation of the user's oil products. Customized to make it suitable for corporate production and laboratory edible oil scientific research.

The multi-functional software equipped with ATR7010EO can realize rapid analysis of edible oil adulteration and support users to quickly extract the information required for adulteration, allowing users to make subsequent decisions more easily and improve the quality of edible oil products.

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1. Parameter

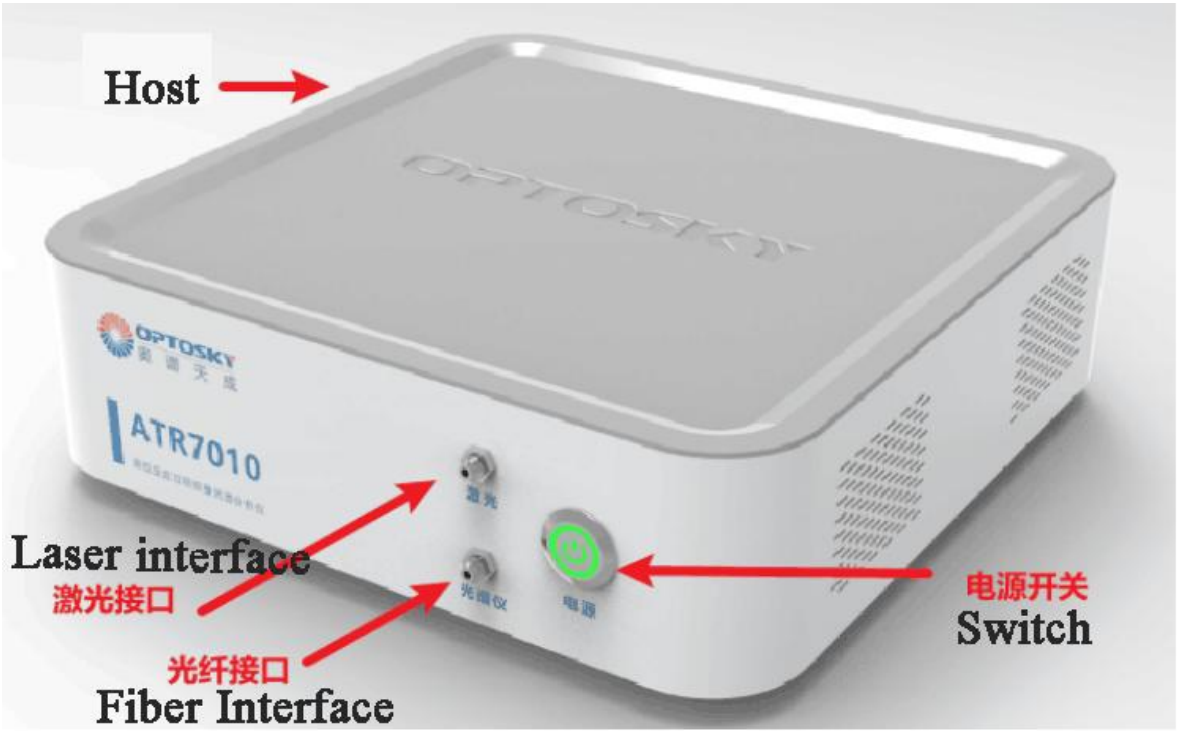

Figure 1 Instrument appearance information

ATR7010EO	
Edible oil adulteration content	0%～100%
Measuring cooking oil types	Adulteration of soybean oil, camellia oil, rapeseed oil, corn oil, etc.
detector	Ultra-highly sensitive refrigerated (-10°C) back-illuminated 2048*64 area array detector
laser	830nm (can be customized according to user's actual needs)
Maximum laser power	450mW
Spectral stability	σ/μ < 0.5% (COT 8 hours)
temperature stability	Spectral shift ≤ 1 cm-1 (10-40 ℃)
signal-to-noise ratio	>3000:1
Laser diameter	Outer diameter 12.7mm, hole diameter 8.5mm
Software function	Quantitative measurement of adulteration in edible oils
interface	USB2.0, SMA905
power supply	DC5V, 3.5A
weight	<4.3kg
size	About 30cm×30cm×9.5cm

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2. Application information

Figure 2 Measurement pictures of a customer's camellia oil sample (customized by customer)

Figure 2 above is a picture of tea oil doping measurement customized by a customer.

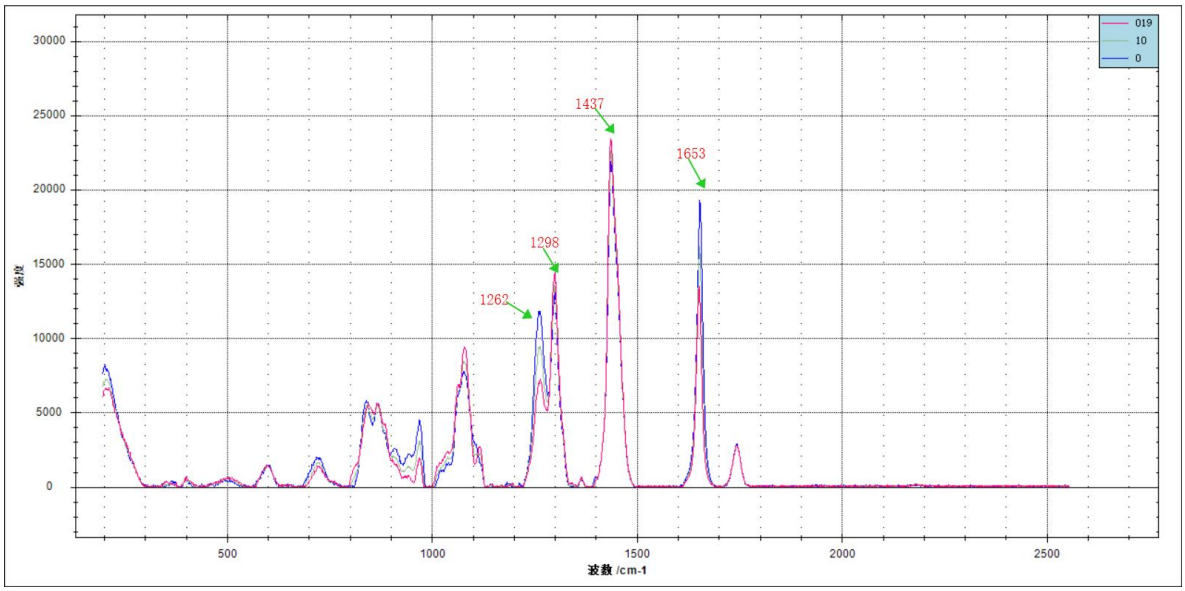

Figure 3 Raman characteristic peaks of edible oil

As shown in Figure 3 above, a customer measured the adulteration of edible oil and the test result was 41.15%.

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	第一次	第二次	第三次	平均值（%）	相对误差（%）	茶油理论值（%）	绝对误差（%）	相对误差（%）
1	99.64	99.18	99.54	99.45	0.242	100.00	0.547	0.547
2	68.64	69.19	70.55	69.46	0.983	67.52	-1.936	-2.867
3	45.08	44.39	45.2	44.89	0.437	40.53	-4.362	-10.764
4	99.09	98.93	97.16	98.39	1.071	96.73	-1.665	-1.722
5	98.1	97.35	97.57	97.67	0.386	96.73	-0.945	-0.977
6	92.18	91.46	91.53	91.72	0.397	90.76	-0.966	-1.065
7	60.71	61.29	60.97	60.99	0.291	57.03	-3.955	-6.935
8	70.03	69.82	69.85	69.90	0.114	67.52	-2.376	-3.519
9	3.55	2.92	3.18	3.22	0.317	0.00	-3.217	#DIV/0!
10	88.47	87.82	88.76	88.35	0.481	87.86	-0.493	-0.561
11	98.46	99.09	99.27	98.94	0.425	100.00	1.060	1.060
12	45.39	44.76	44.96	45.04	0.322	41.61	-3.424	-8.229
13	89.85	91.31	91.09	90.75	0.787	90.76	0.007	0.008
14	90.4	89.28	88.31	89.33	1.046	87.86	-1.473	-1.676
15	59.96	59.88	59.87	59.90	0.049	57.03	-2.869	-5.030
16	44.05	43.65	44.95	44.22	0.666	40.53	-3.689	-9.102
17	87.46	86.85	87.87	87.39	0.513	87.86	0.464	0.528
18	93.41	93.48	93.08	93.32	0.214	96.73	3.405	3.520
19	78.39	76.53	76.15	77.02	1.199	75.65	-1.376	-1.818
20	98.12	97.9	97.9	97.97	0.127	100.00	2.027	2.027
21	85.8	86.9	86.53	86.41	0.560	85.44	-0.973	-1.138
22	87.8	87.14	86.77	87.24	0.522	85.44	-1.799	-2.106
23	86.02	85.4	85.84	85.75	0.319	85.44	-0.316	-0.370
24	91.68	91.53	91.27	91.49	0.207	90.76	-0.736	-0.811
25	70.05	69.56	68.47	69.36	0.809	67.52	-1.836	-2.719
26	90.83	92.16	91.16	91.38	0.693	90.76	-0.626	-0.690
27	73.91	73.82	72.61	73.45	0.726	75.65	2.201	2.910
28	43.33	43.96	44.75	44.01	0.712	40.53	-3.486	-8.601
29	67.45	69.14	69.73	68.77	1.183	67.52	-1.249	-1.850
30	86.83	87.81	86.37	87.00	0.735	87.86	0.854	0.972
31	3.12	2.97	3.1	3.06	0.081	0.00	-3.063	#DIV/0!
32	44.81	44.88	45.24	44.98	0.231	41.61	-3.364	-8.084
33	60.06	59.63	59.07	59.59	0.496	57.03	-2.552	-4.475
34	59.11	59.67	59.11	59.30	0.323	57.03	-2.262	-3.966
35	94.92	96.44	94.64	95.33	0.969	96.73	1.395	1.442

Table 1 Measurement data of tea oil samples from a customer

As shown in the table, the adulteration error of the tested edible camellia oil is basically about 2%.

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