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RSMD006 - Thickness and Composition of Piezoelectric PZT Films

WDXRF can monitor piezoelectric PZT film thickness and composition with high precision and throughput.

Thin PZT repeatability test

Metrology Tool: WDA-3650

Indicators: 15 mm collimator, 60 sec count time

	PZT_THK	PbO	ZrO ₂	TiO ₂
	nm	mol%	mol%	mol%
1	62.6	34.98	30.09	34.93
2	62.8	34.75	30.31	34.94
3	62.7	34.87	30.05	35.08
4	62.8	34.82	30.24	34.94
5	62.6	34.85	30.21	34.94
6	62.7	34.86	30.10	35.04
7	62.7	34.73	30.24	35.04
8	62.7	34.85	30.13	35.02
9	62.7	34.90	30.01	35.09
10	62.6	34.94	29.95	35.11
Average	62.7	34.85	30.18	34.97
Maximum	62.8	34.98	30.31	35.08
Minimum	62.6	34.75	30.05	34.93
Range	0.2	0.23	0.26	0.15
s.d.	0.08	0.084	0.108	0.064
r.s.d. (%)	0.13	0.24	0.36	0.18

Thick PZT repeatability test

Metrology Tool: WDA-3650

Indicators: 10 mm collimator, 40 sec count time

	PZT_THK	PbO	ZrO₂	TiO₂
	nm	mol%	mol%	mol%
1	3931.3	54.48	24.27	21.25
2	3927.1	54.48	24.33	21.19
3	3921.9	54.52	24.26	21.22
4	3928.3	54.45	24.33	21.21
5	3924.5	54.48	24.34	21.18
6	3928.0	54.49	24.30	21.22
7	3828.9	54.44	24.31	21.25
8	3928.5	54.47	24.32	21.21
9	3929.3	54.47	24.28	21.25
10	3930.1	54.46	24.29	21.25
Average	3927.8	54.47	24.30	21.22
Maximum	3931.3	54.52	24.34	21.25
Minimum	3921.9	54.44	24.26	21.18
Range	9.4	0.08	0.08	0.07
s.d.	3.60	0.025	0.038	0.027
r.s.d. (%)	0.09	0.05	0.16	0.13

Related products



AZX 400

WDXRF sequential spectrometer for light-element and metal film thickness and composition measurements for up to 400 mm coupons, sputtering targets, and wafers



WaferX 310

WDXRF simultaneous spectrometer for thickness and composition measurements for up to 300 mm wafers



WDA-3650

WDXRF simultaneous spectrometer for light-element and metal film thickness and composition measurements on wafers and media disks for up to 200 mm wafers