Tech Tips

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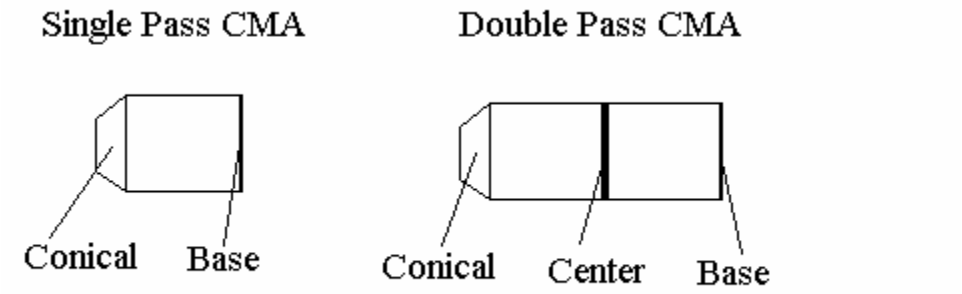
CMA conical ceramics

The PHI CMA (cylindrical mirror analyzer) utilizes conical and flat termination ceramics to eliminate electrostatic edge effects between the inner and outer cylinders. These ceramics are essentially gold rings with resistors in between that divide the outer cylinder sweep voltage down in even steps. The result is a very high throughput and even energy distribution of the Auger electrons. If a CMA has a poor contact on a termination ceramic, the results are noisy data and poor energy linearity.



If you suspect your CMA may have a termination ceramic contact problem, turn off the power to the analyzer supply, electron multiplier supply and electron gun control, and remove the VM or IC and OC cables from the CMA and measure the resistance. The table bellow shows the nominal values for most PHI CMAs. If your analyzer is out of specification, contact RBD technical support to discuss the repair process. In most cases, termination ceramic contact problems can be easily fixed on site by the system operator or lab technician with a minimal amount of technical support time.

Resistance in Meg Ohms

Analyzer	Conical	Center	Base	VM to Ground	IC to OC
10-155	6.0 +/- 1.0		7.5 +/- 2.5	3.3 +/- 0.5	
10-234G	7.5 +/- 2.5		7.5 +/- 2.5	3.75 +/- 0.5	
15-110, A, B	1.0 +/- 0.1		4.0 +/- 1.0	0.8 +/- 0.1	
15-255	1.0 +/- 0.1	2.0 +/- 0.6	4.0 +/- 1.0		.57 +/- 0.1
25-110, A	6.0 +/- 1.0		6.0 +/- 1.0	3.0 +/- 0.5	
25-120, A	6.0 +/- 1.0		6.0 +/- 1.0	3.0 +/- 0.5	
25-260, 270	1.0 +/- 0.1	2.0 +/- 0.6	6.0 +/- 1.0		0.6 +/- 0.1