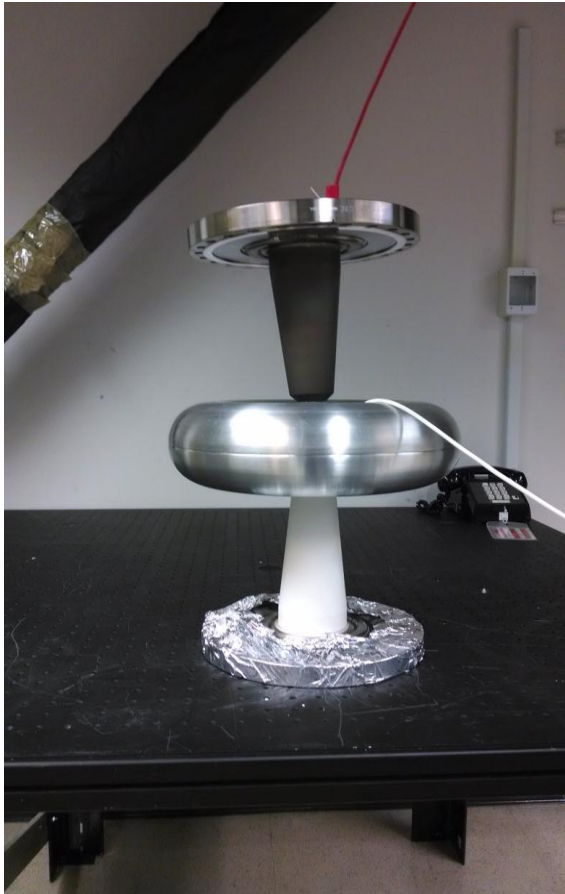


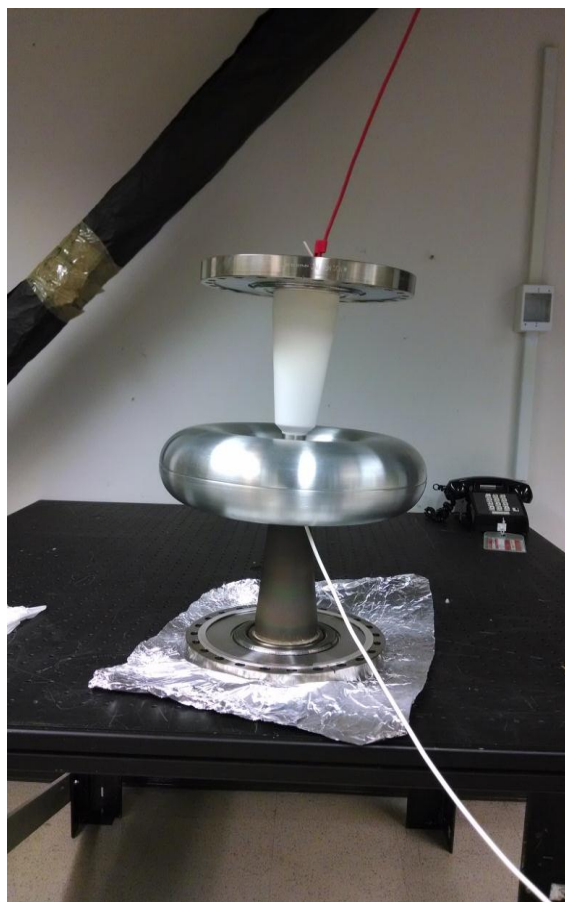
Experimental setup to check the resistivity of the ceramics.



A current limited (<5mA) Bertan 6KV power supply is used to bias the mid point of the ceramic stack. A corona ring limits any corona discharge that can be picked up by the picoammeter. The white wire is the incoming voltage. The read wire goes to the picoammeter with the return going back to the power supply to complete the circuit. Any current that flows down to the table is not measured so we are only looking at current that flows through the resistive coating. Voltage is reversed to verify there is no significant error in geometry measurement effects.

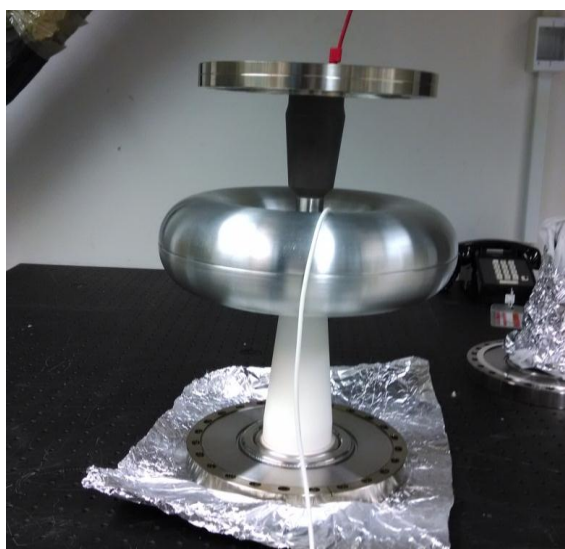
Test #1 of ZrO coated ceramic

<u>Voltage applied (KV)</u>	<u>Current observed (nA)</u>	<u>Calculated resistivity</u>
1	1.46	6.84932E+11
2	3.006	6.65336E+11
3	4.523	6.63277E+11
4	6.04	6.62252E+11
5	7.55	6.62252E+11
-1	-1.607	6.22278E+11
-2	-3.125	6.4E+11
-3	-4.63	6.47948E+11
-4	-6.14	6.51466E+11
-5	-7.62	6.56168E+11



Test of pure Alumina ceramic. Apparatus is flipped.

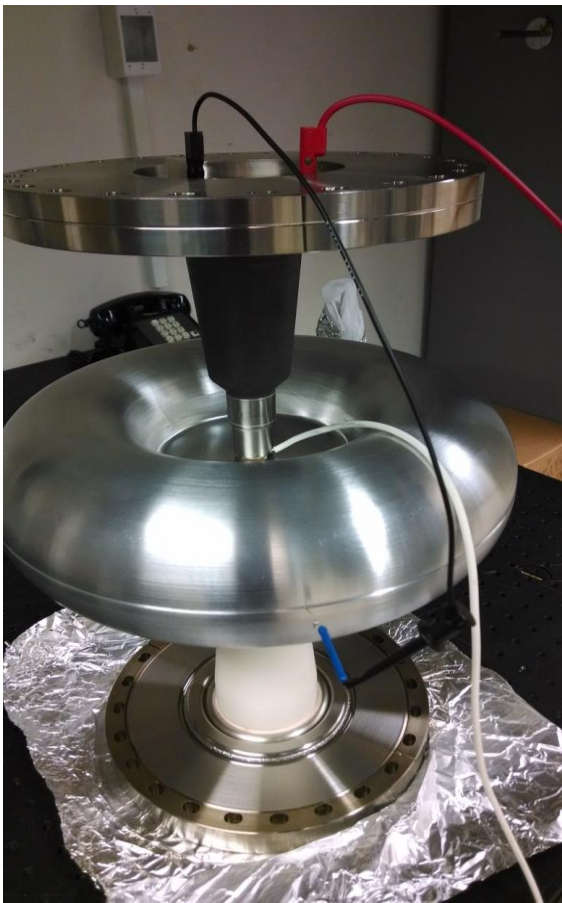
<u>Voltage applied (KV)</u>	<u>Current observed (nA)</u>	<u>Calculated resistivity</u>
1	0.2	5E+12
2	0.5	4E+12
3	0.73	4.10959E+12
4	0.98	4.08163E+12
5	1.23	4.06504E+12
-1	-0.51	1.96078E+12
-2	-0.71	2.8169E+12
-3	-0.86	3.48837E+12
-4	-1.1	3.63636E+12
-5	-1.31	3.81679E+12



Test of R28 conductive ceramic.

<u>Voltage applied (KV)</u>	<u>Current observed (nA)</u>	<u>Calculated resistivity</u>
1	0.1	1E+13
2	0.12	1.66667E+13
3	0.1	3E+13
4	0.16	2.5E+13
5	0.2	2.5E+13
-1	-0.05	2E+13
-2	-0.14	1.42857E+13
-3	-0.15	2E+13
-4	-0.21	1.90476E+13
-5	-0.26	1.92308E+13

WHY? Why did this ceramic show nothing when the pure alumina R30 showed something?



Check of the test apparatus to make sure the circuit was complete.  
A 1 GigOhm resistor is placed across the R30 ceramic and touches the corona ring.

100 volts applied from Bertan power supply yields 98nA. Circuit is good.

Conclusion: The white ceramic that yielded the lower resistance may be more susceptible to water absorption than the semi conductive ceramic. (wild guess).  
Perhaps the only way to get an accurate reading is by putting the ceramics in an oven to remove surface water and perhaps test them under vacuum.