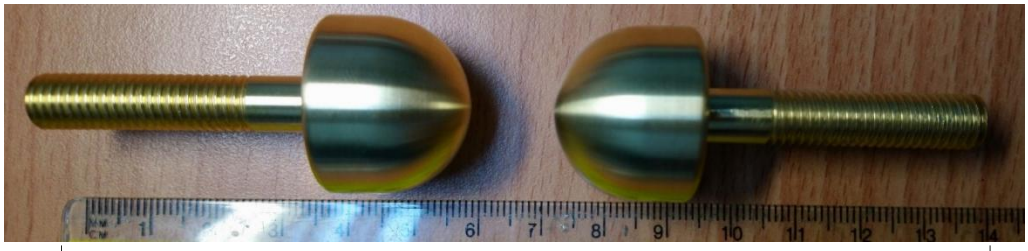
2021/4/26_Spark gap switch discharge tests

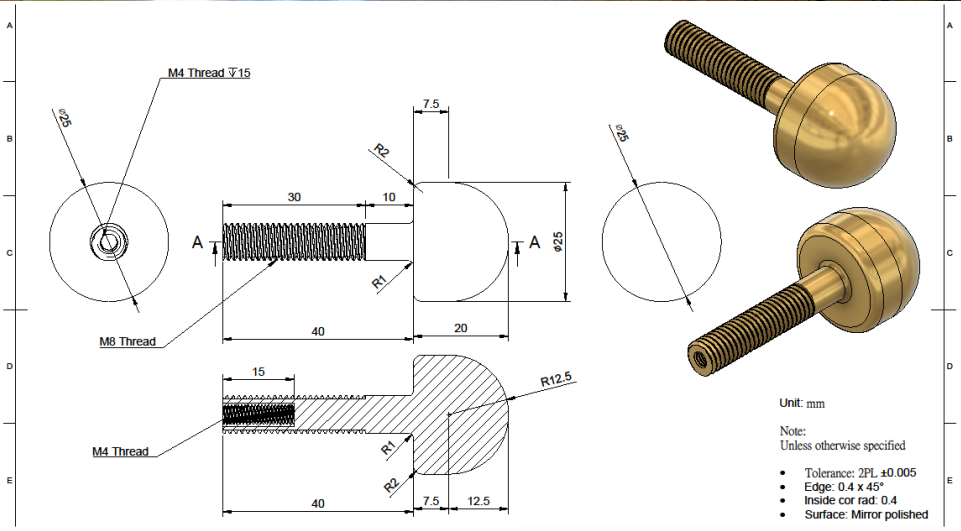
1. The experiment's purpose:

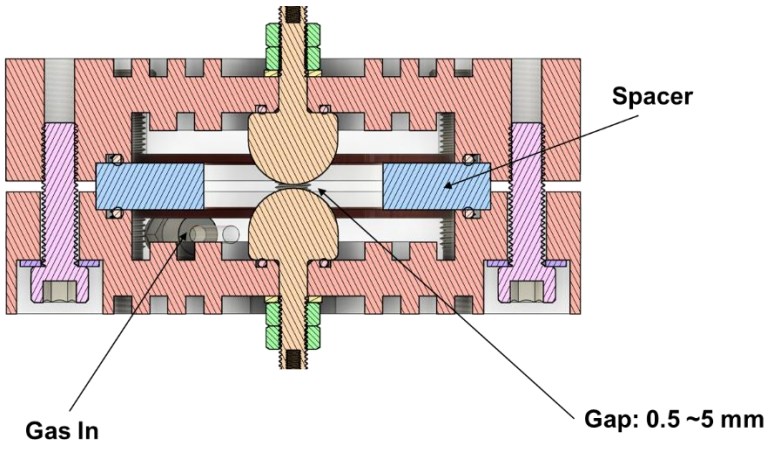
(1) We would like to study the discharge characteristic of the spark gap switch.
(2) We would like to check if our capacitors are polarized or not.
(3) We would like to check the variations between different capacitors which are the same kind.

2. The spark gap:

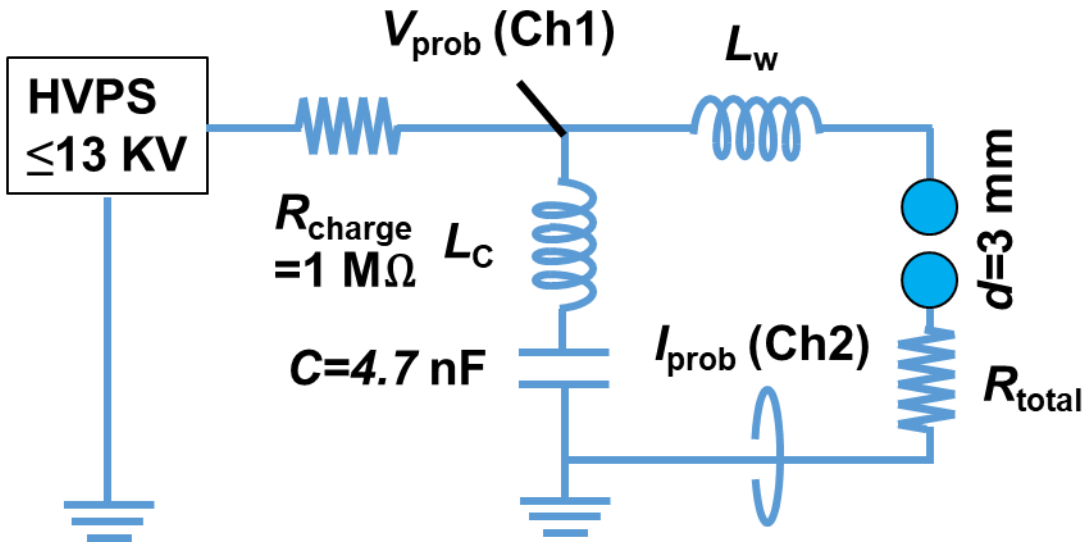
The gap between two electrodes are adjustable between 0.5 ~ 5 mm. However, 3 mm was used in the experiment. The gas was the original air in the switch. No other air was supplied to the switch.







3. The experimental setup:



4. Used Instruments:

(1) High voltage power supply: Spellman SL30.

(2) Oscilloscope: Tektronix DPO2024B.

(3) High voltage probe: Tektronix P6015A (1000x, 20kV DC, max, 40 kV Pulse max).

(4) Current monitor: Pearson 301X (100x, 50 kA max).

(5) Capacitors: Vishay Ceramic cap Y5U-715C30DKD47; C=4.7nF; V_{max}=30 kV; Phi61.5mm x 30mm.

5. Data sets:

(1) In all experiments:
Ch1: V of cap.
Ch2: A of the discharge current.

(2) Cap 1 and Cap 3 were the same kind of capacitors. We would like to test the variations caused by different capacitors.

(3) Data was stored in the following folder:
\\Experiments\2016_pchang\20210426_NCSIST_SparkGap_Discharge

Experimental sets:

#/	Discriptions	Data set
1	Cap1, normal, T/div=400 ns.	T0000~T0004
2	Cap1, normal, T/div=4 us.	T0005~T0007
3	Cap1, normal, T/div=200 ms.	T0008~T0010
4	Cap1, normal, T/div=4 ms.	T0011~T0015
5	Cap1, flipped, T/div=400 ns.	T0016~T0020
6	Cap1, flipped, T/div=4 us.	T0021~T0023
7	Cap1, flipped, T/div=200 ms.	T0024~T0026
8	Cap1, flipped, T/div=4 ms.	T0027~T0031
9	Cap3, normal, T/div=400 ns.	T0032~T0036
10	Cap3, flipped, T/div=400 ns.	T0037~T0041

6. Notes:

None.