

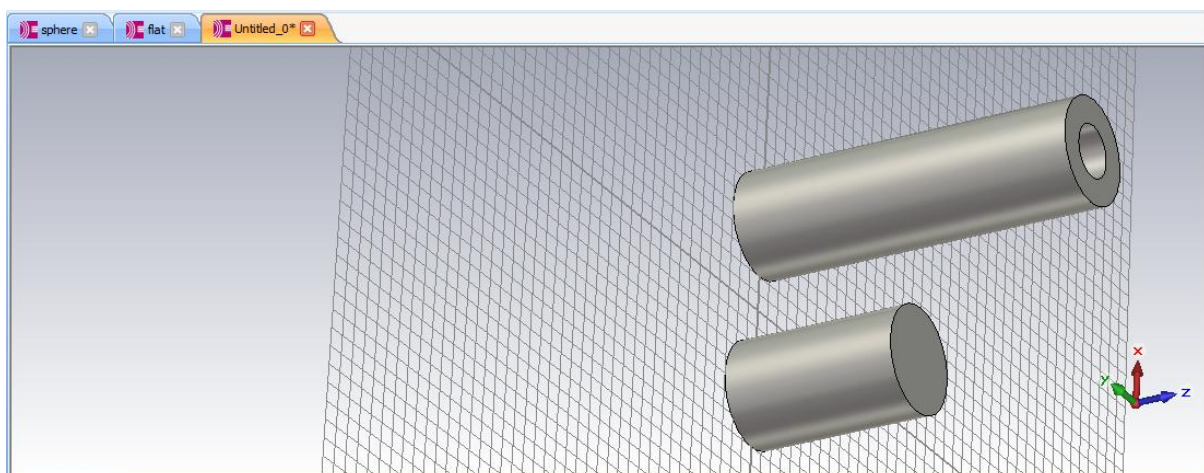
ASSIGNMENT 2
3D PLOT OF ELECTRIC FIELD FOR DIFFERENT ELECTRODE
CONFIGURATIONS

13/EE/51	PARAS KUMAR
13/EE/52	JONNALA SAI TEJA REDDY
13/EE/53	PANKAJ BALDEWA
13/EE/54	GONDANE ASHISH RAJESH
13/EE/55	MALAYANUR RUPESH
13/EE/56	PANKAJ KUMAR NAIK
13/EE/57	ATUL KUMAR GUPTA
13/EE/58	SACHIN KUMAR TOPPO
13/EE/59	SUBRATA SEN
13/EE/60	SUBHRATANU SARKAR

3D PLOT OF ELECTRIC FIELD FOR DIFFERENT ELECTRODE CONFIGURATIONS

Algorithm:

- ✚ Install CST Studio.
 - ✚ Start CST Studio.
 - ✚ From given 3 modules "CST Microwave Studio, CST MPhysics Studio, CST EM Studio" open "CST EM studio" to plot electric field.
 - ✚ Dialog Box will appear. Select "Do not use any template" and click OK.
 - ✚ The working coordinate system is displayed. Draw the required shape of electrode.
 - ✚ In Modelling tab, shape of the electrode is taken.
Once the electrode is drawn, material of the electrode is chosen.
- NOTE: in this student edition, lossy metals are not supported for simulation. Thus, we chose PEC (Perfect Electric Conductor) as material.
- ✚ The boundary for field simulation is the defined using the Bounding Box option under simulation tab.
 - ✚ The Electric Potential of the electrodes are defined under simulation tab.
 - ✚ The simulation is carried out and the 3D field can be observed under "2D/3D result"



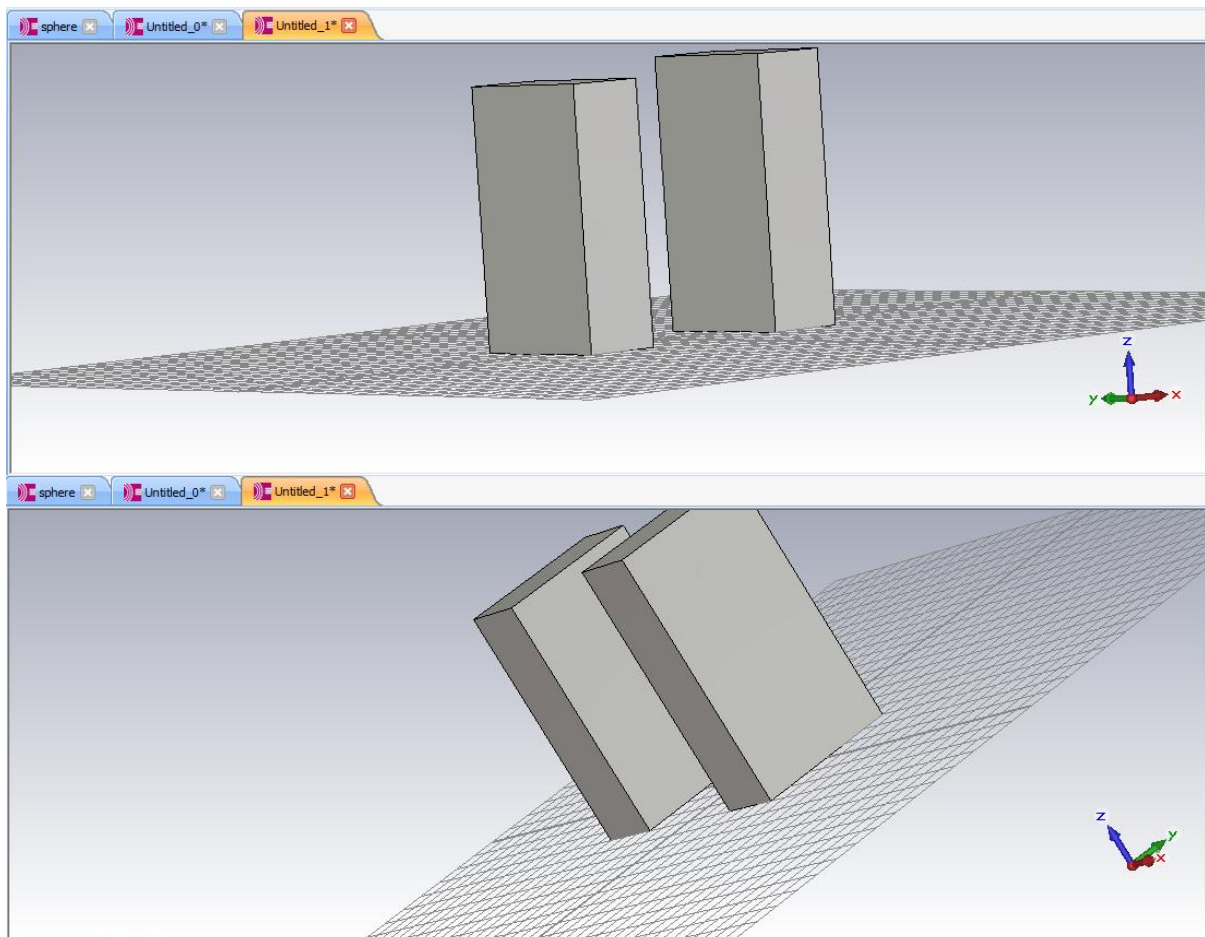
GEOMETRICAL CONFIGURATIONS OF ELECTRODES

For different type of electrode design, we get different electric field.

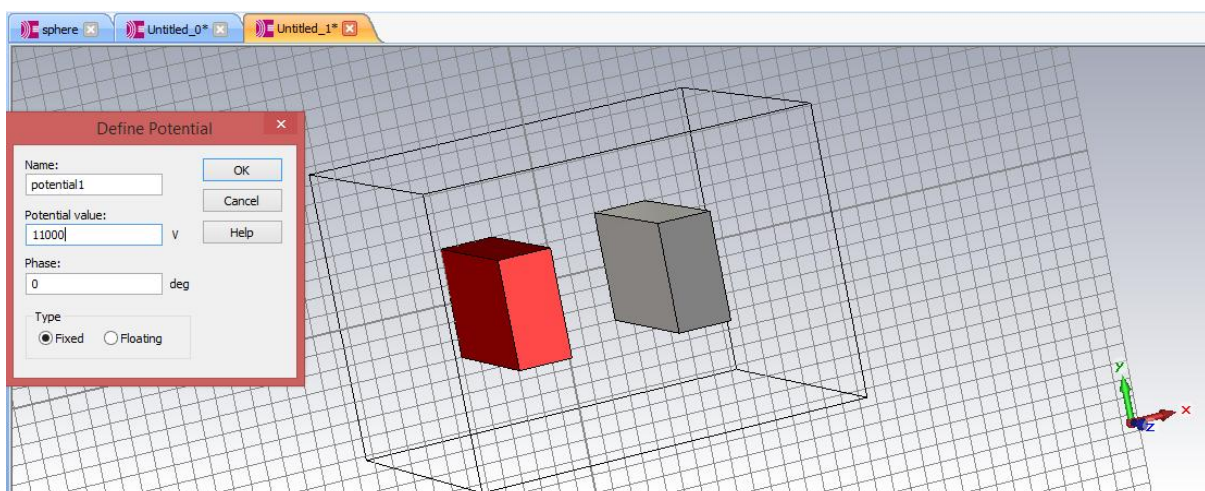
(a) FLAT- FLAT ELECTRODE CONFIGURATION:

$h_1=10.000$

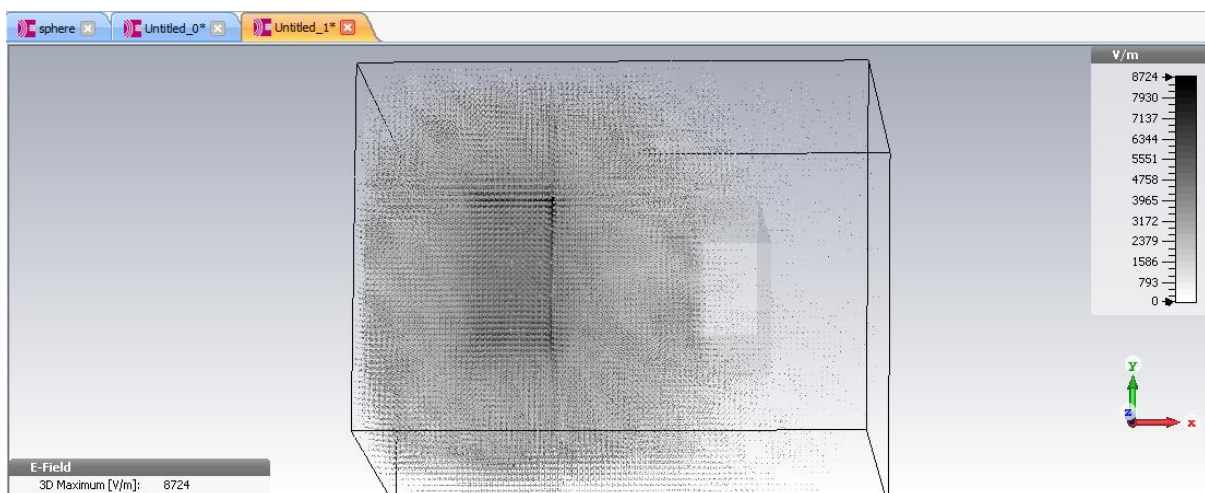
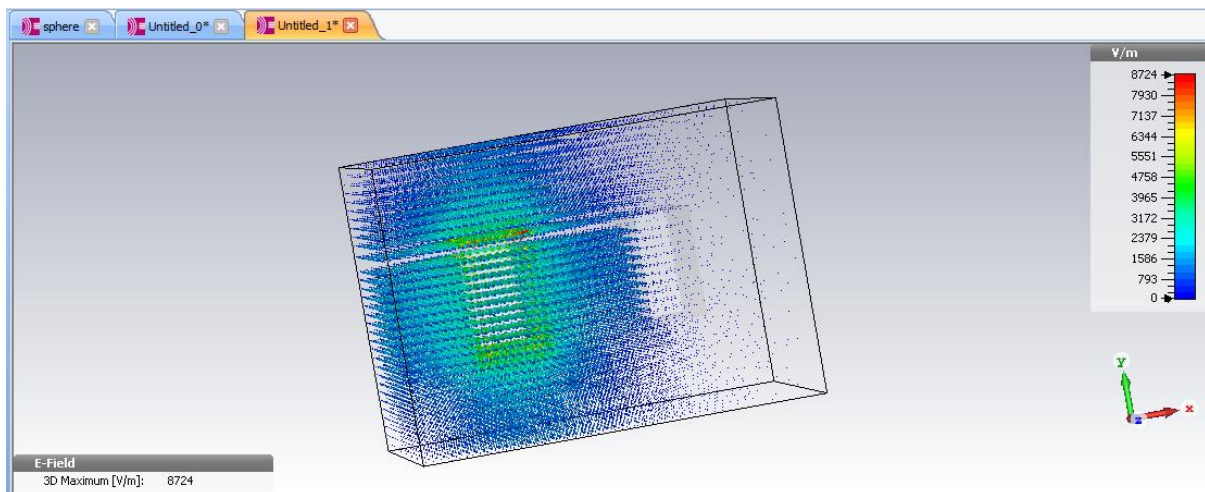
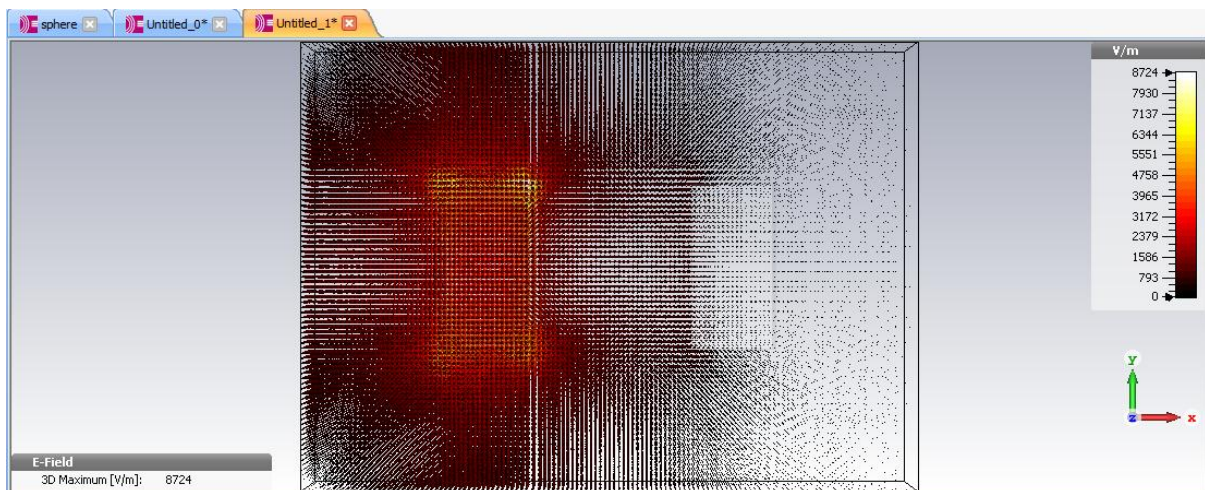
$h_2=10.500$



Potential: $V_1=11\text{kV}$, $V_2=0\text{kV}$



Electric Field

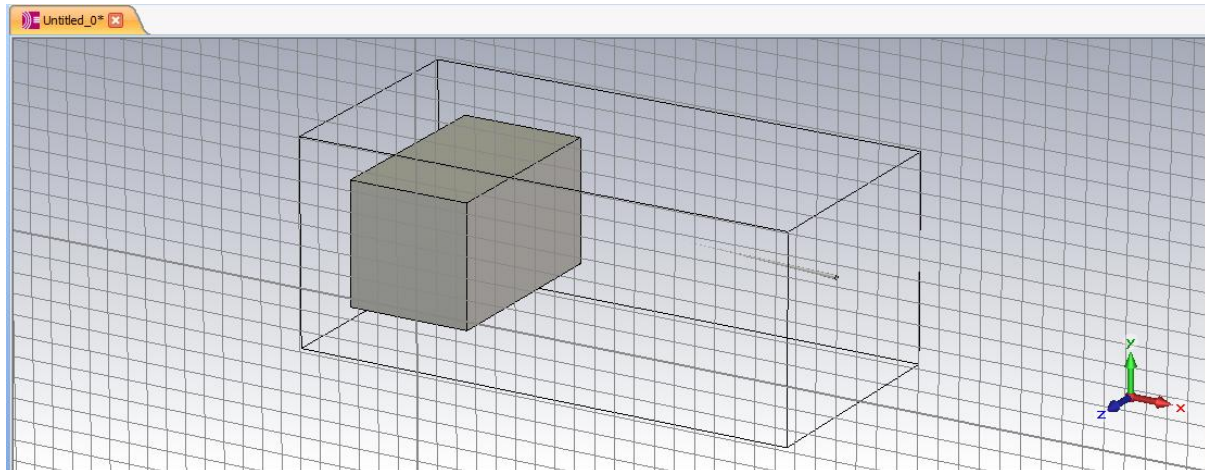


✚ Electric Field of both Flat-Flat electrodes having different potential can be seen here in three colors.

(b) NEEDLE- FLAT ELECTRODE CONFIGURATION:

FLAT: Length-10

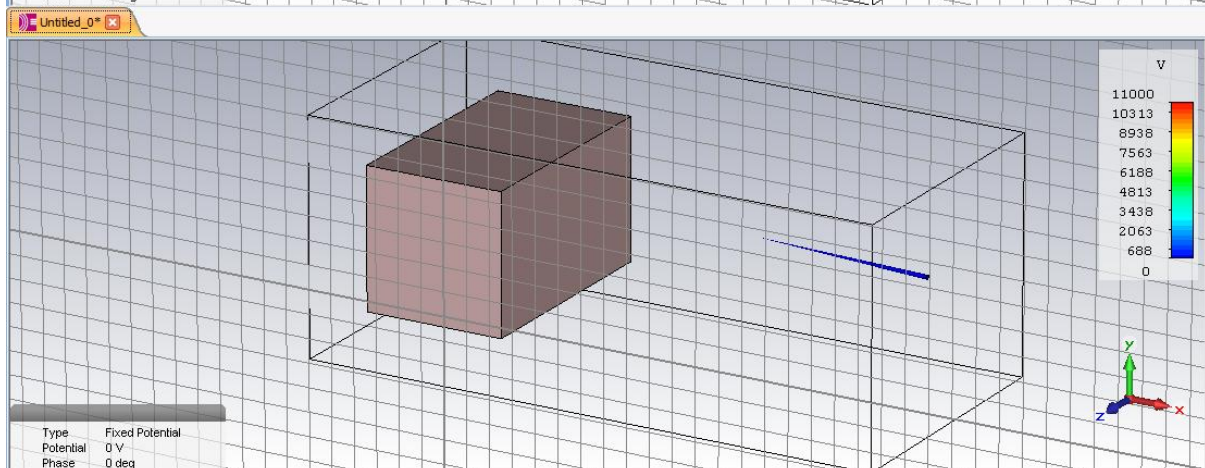
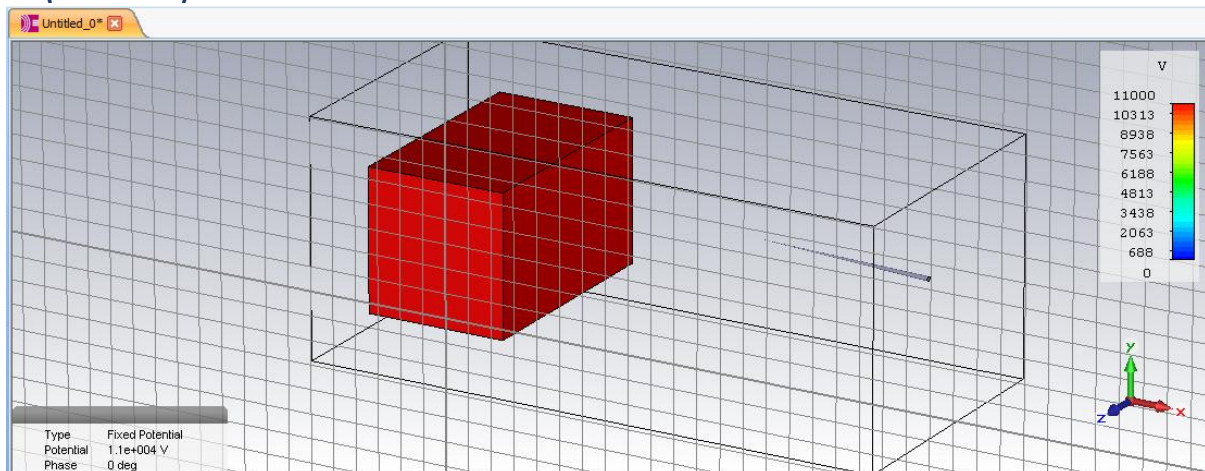
NEEDLE: Length- 8



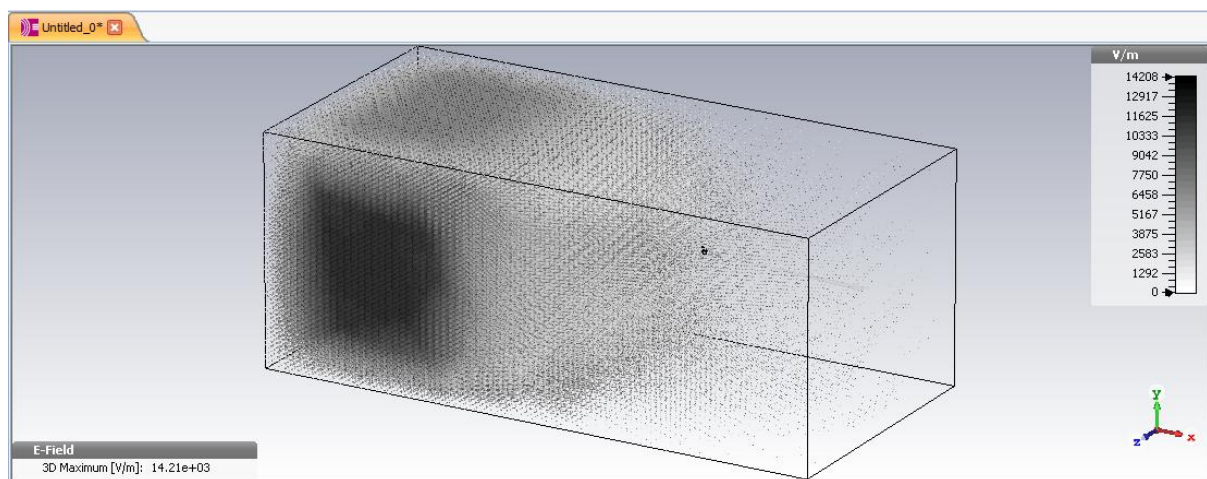
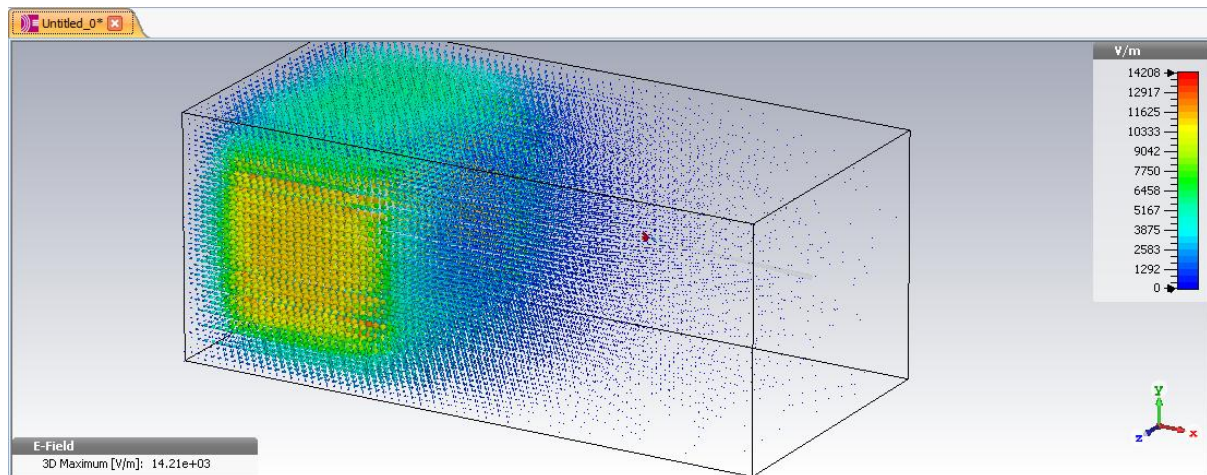
Potential

V1(FLAT) -11000V

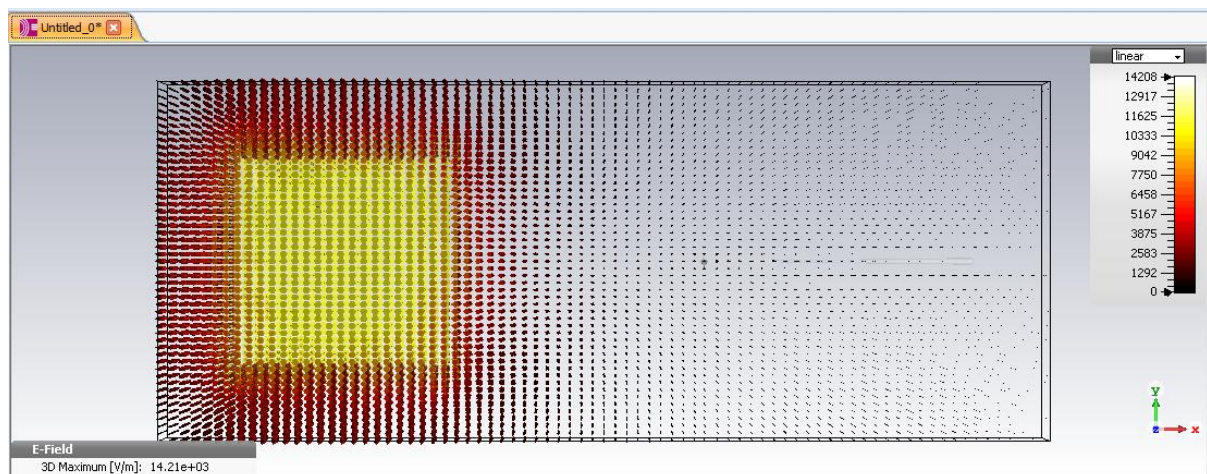
V2(Needle) -0V



Electric Field



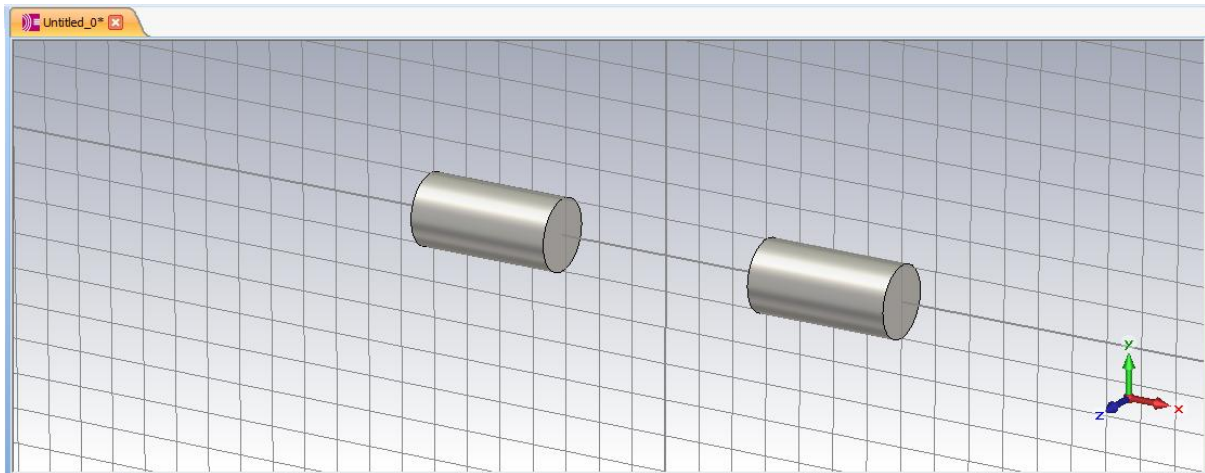
Front View



✚ Electric Field of Flat-Needle electrodes having different potential can be seen here in three colors.

c) ROD-ROD ELECTRODE CONFIGURATION:

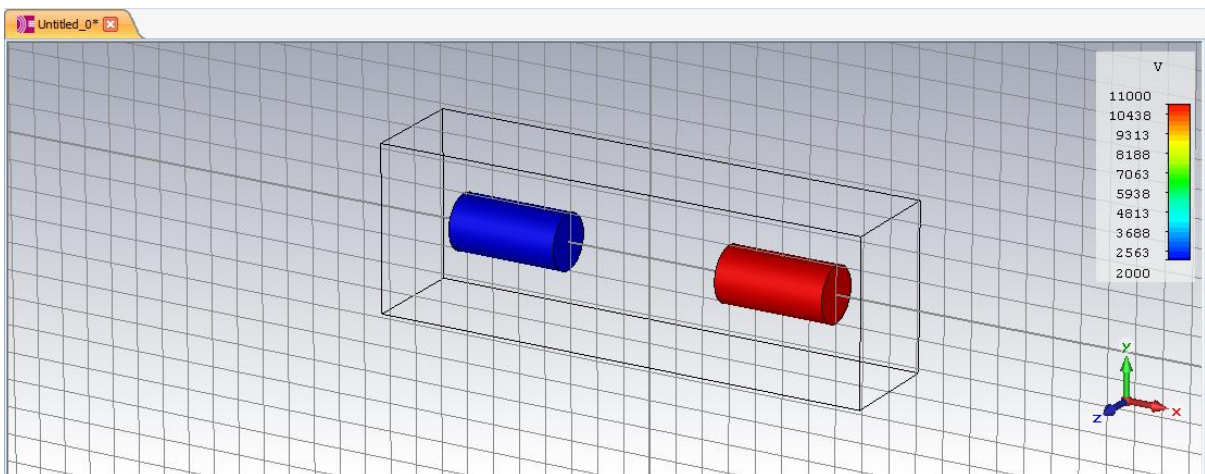
Both rods are of same lengths.



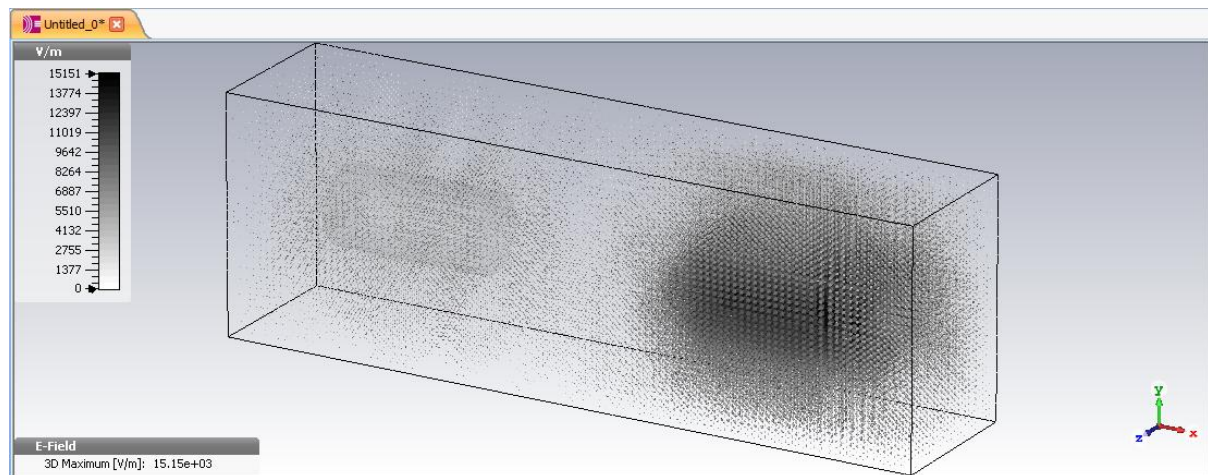
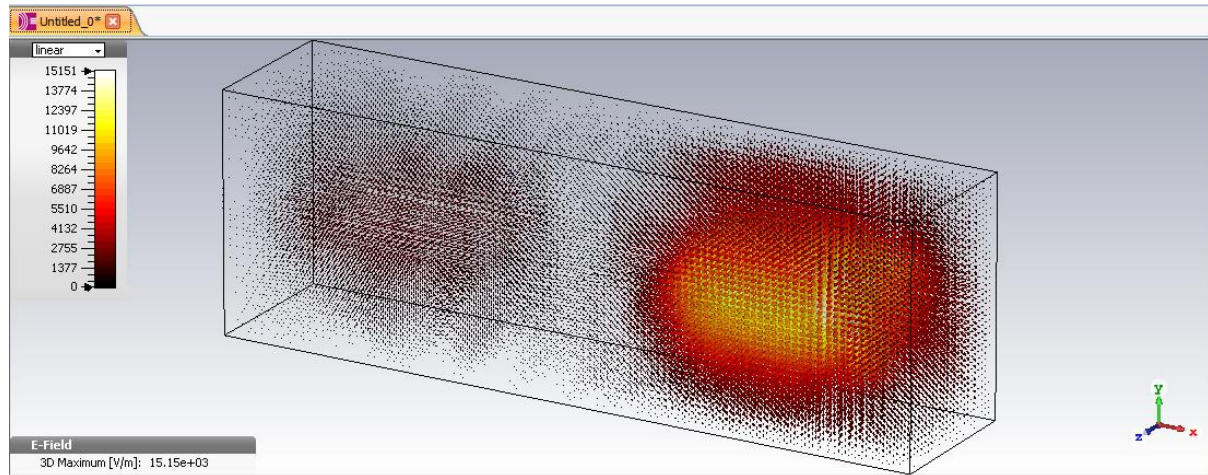
SAME X-AXIS

Potential

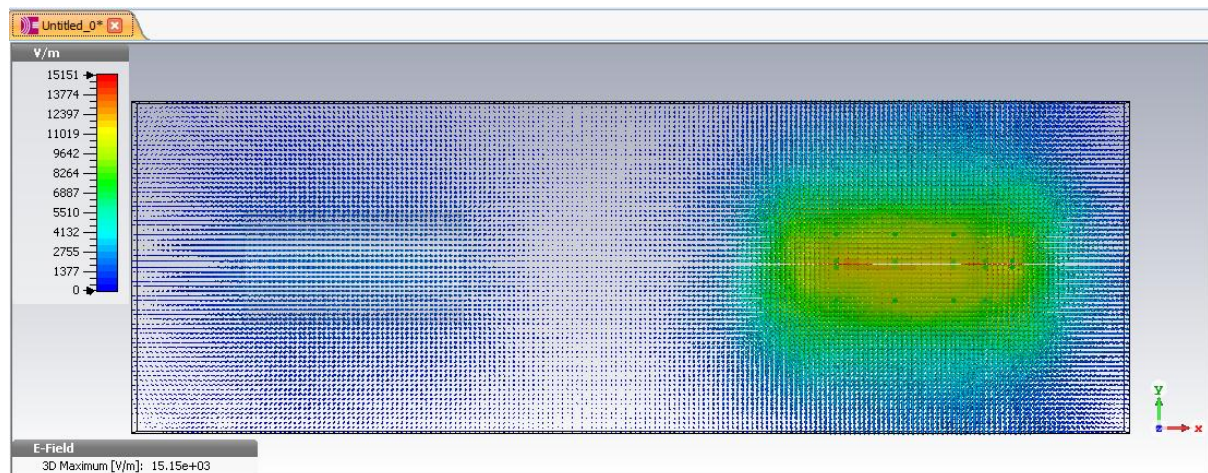
$V_1=2000V$, $V_2= 11000V$



Electric Field



Front View

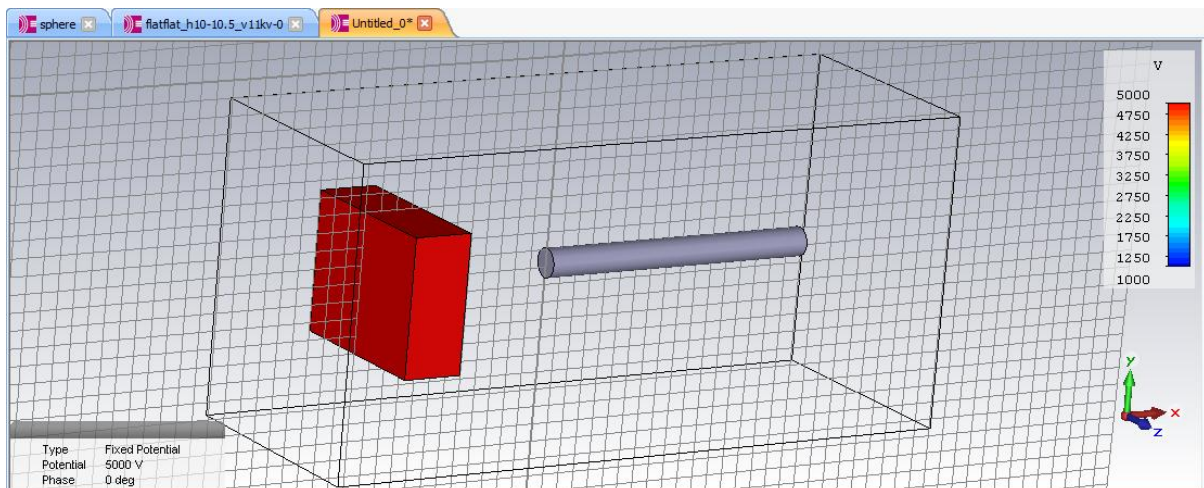
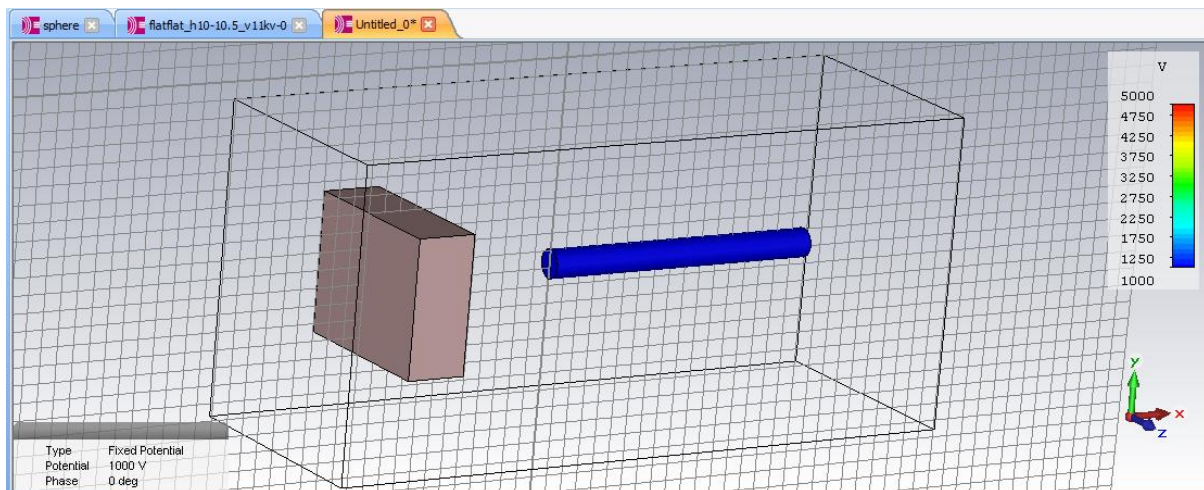
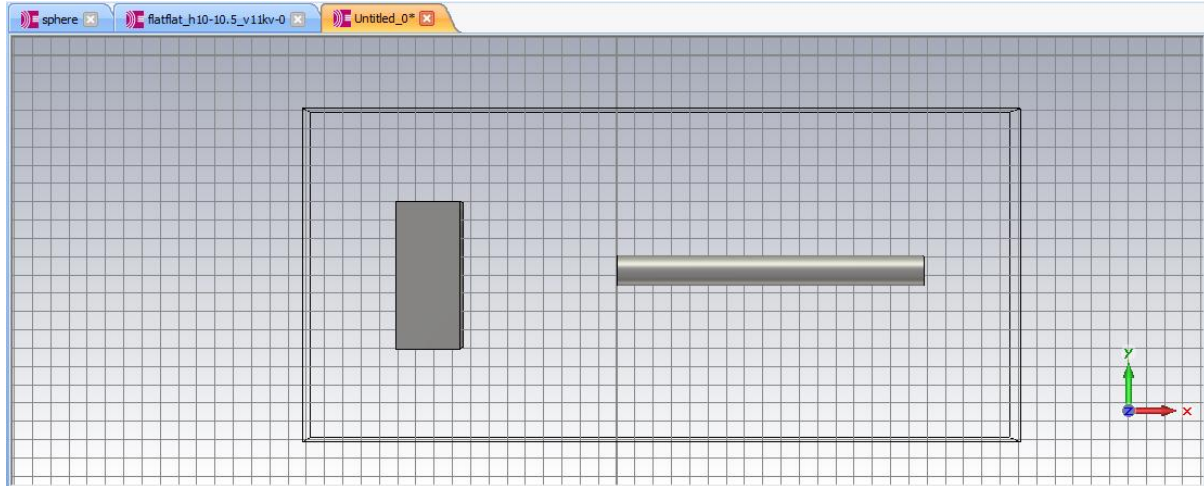


Electric Field of both Rod-Rod electrodes having different potential can be seen here in three colors.

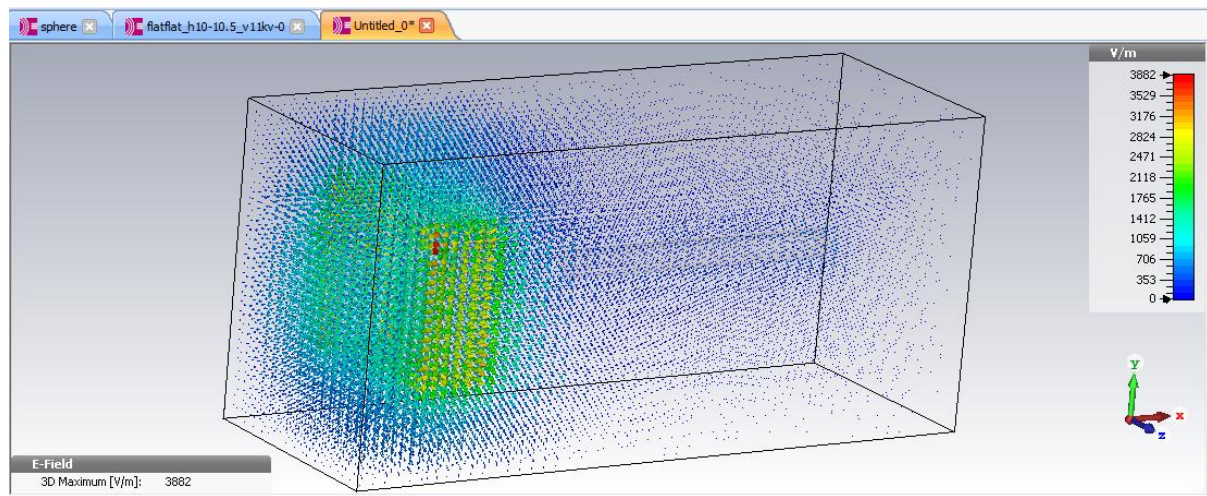
(d) ROD-FLAT ELECTRODE CONFIGURATION:

ROD: $H=20$, $V=5000V$

FLAT: $H=10$, $V=1000V$



Electric Field



SIMULATION SOFTWARE : CST STUDIO SUIT – [STUDENT EDITION] – 2015

The CST STUDIO SUITE® Student Edition has been developed with the aim of introducing us to the world of electromagnetic simulation, making Maxwell's equations easier to understand than ever. Since it is student version, there are certain restrictions.