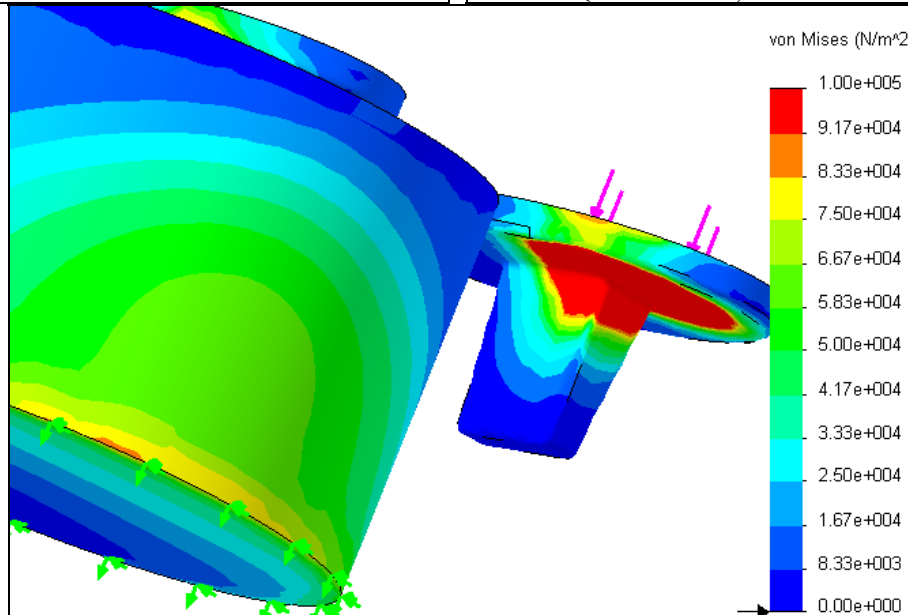
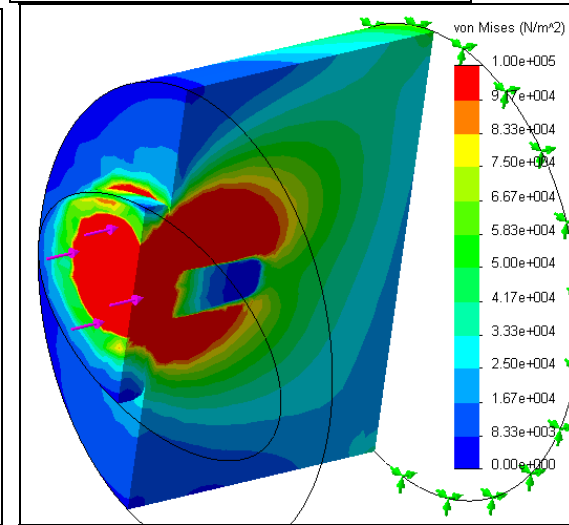
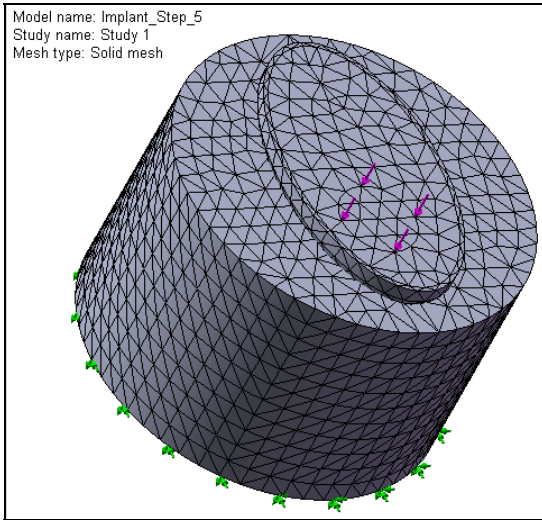
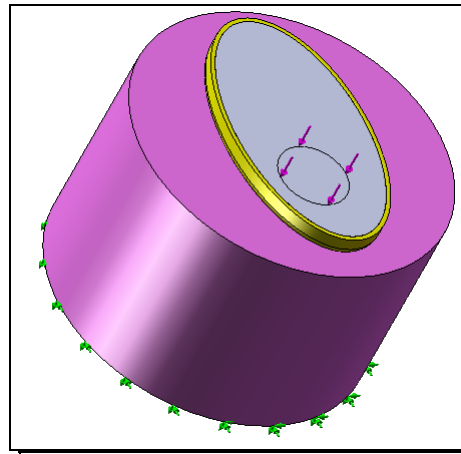
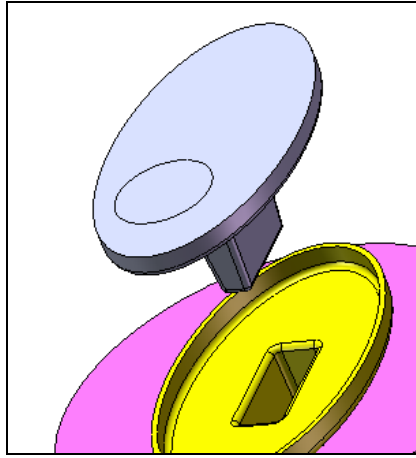


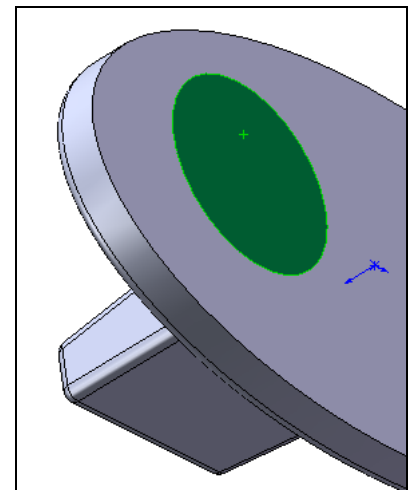
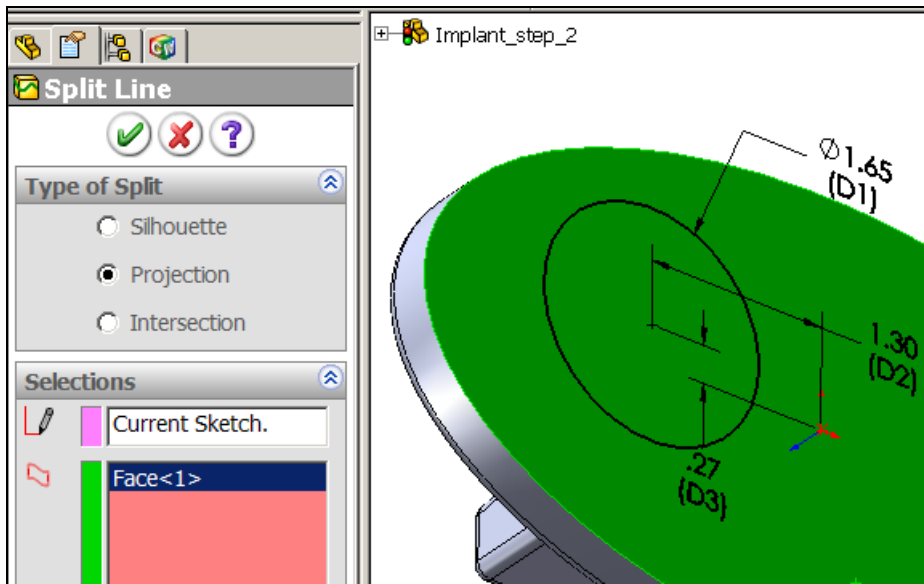
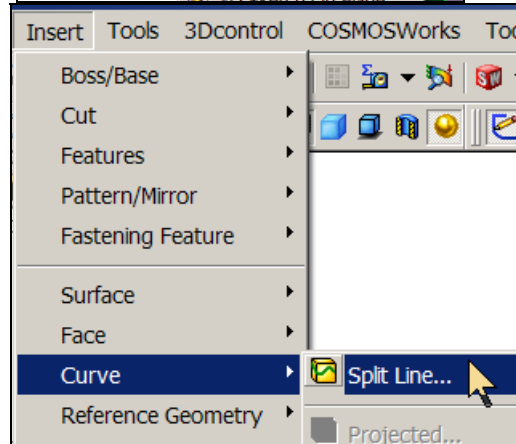
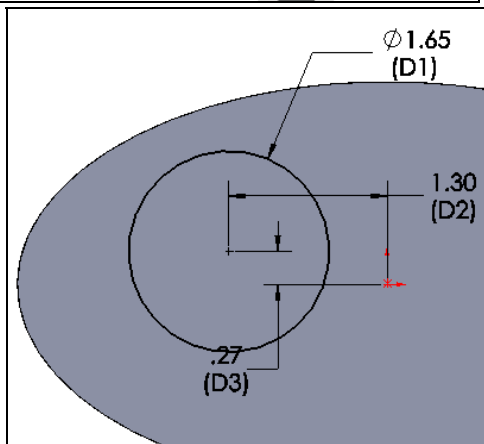
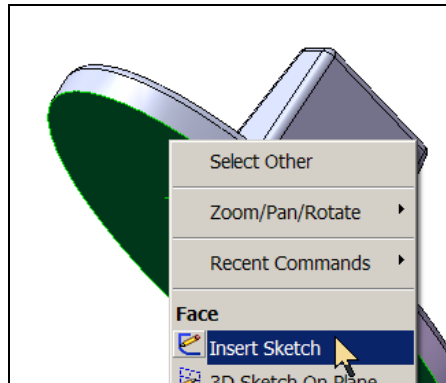
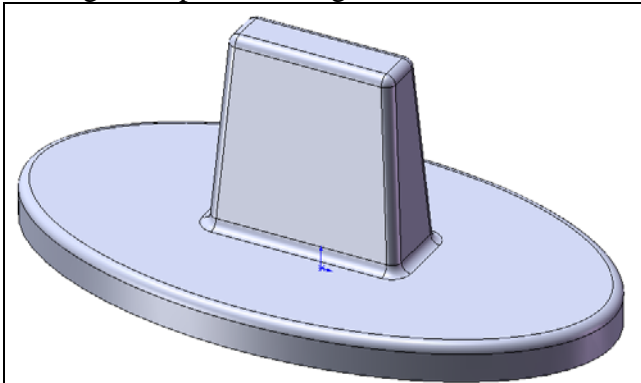
Example: Implant-Cement-Bone Study (draft 1)

Intruduction



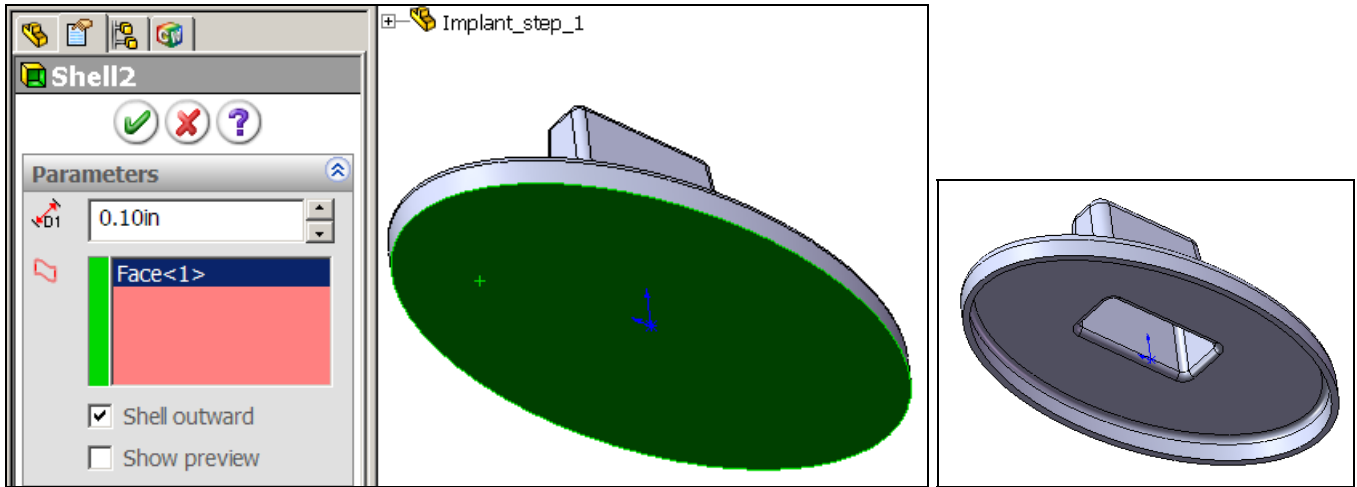
Example: Implant-Cement-Bone Study (draft 1)

Adding an implant loading area

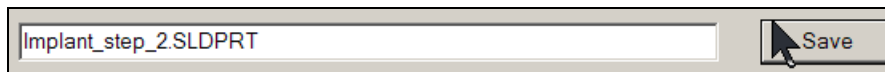
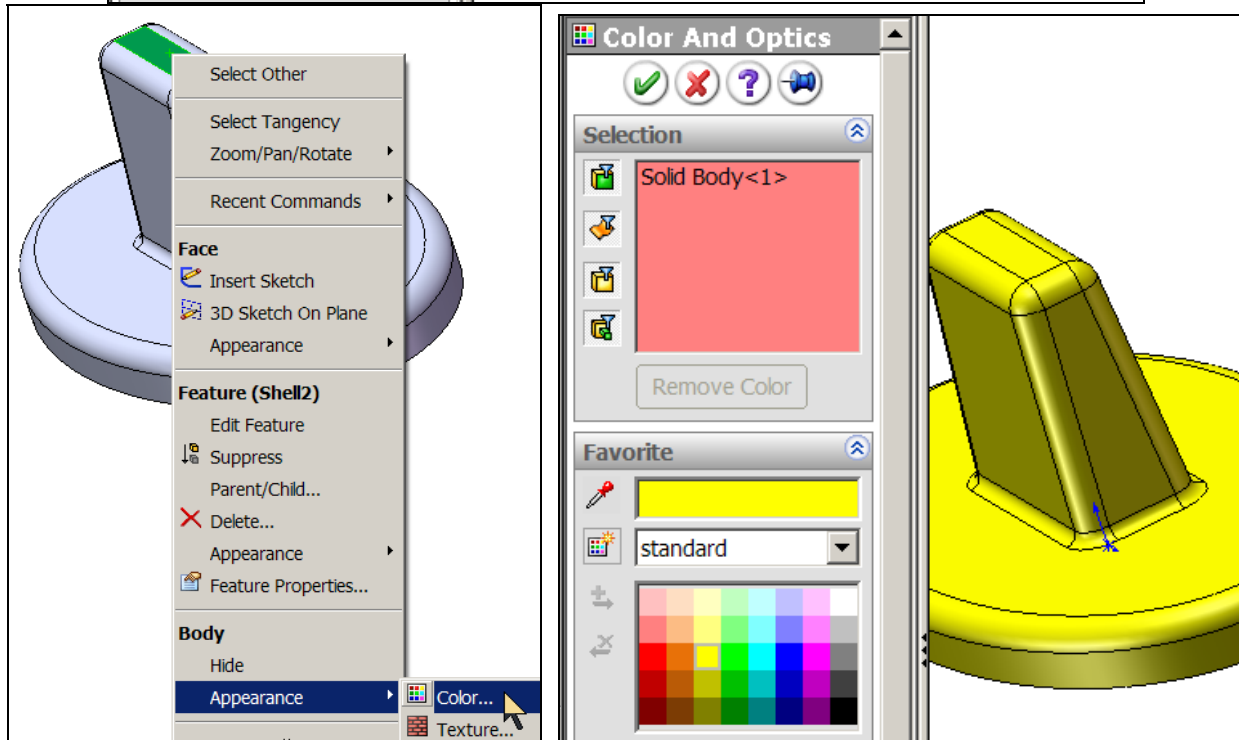
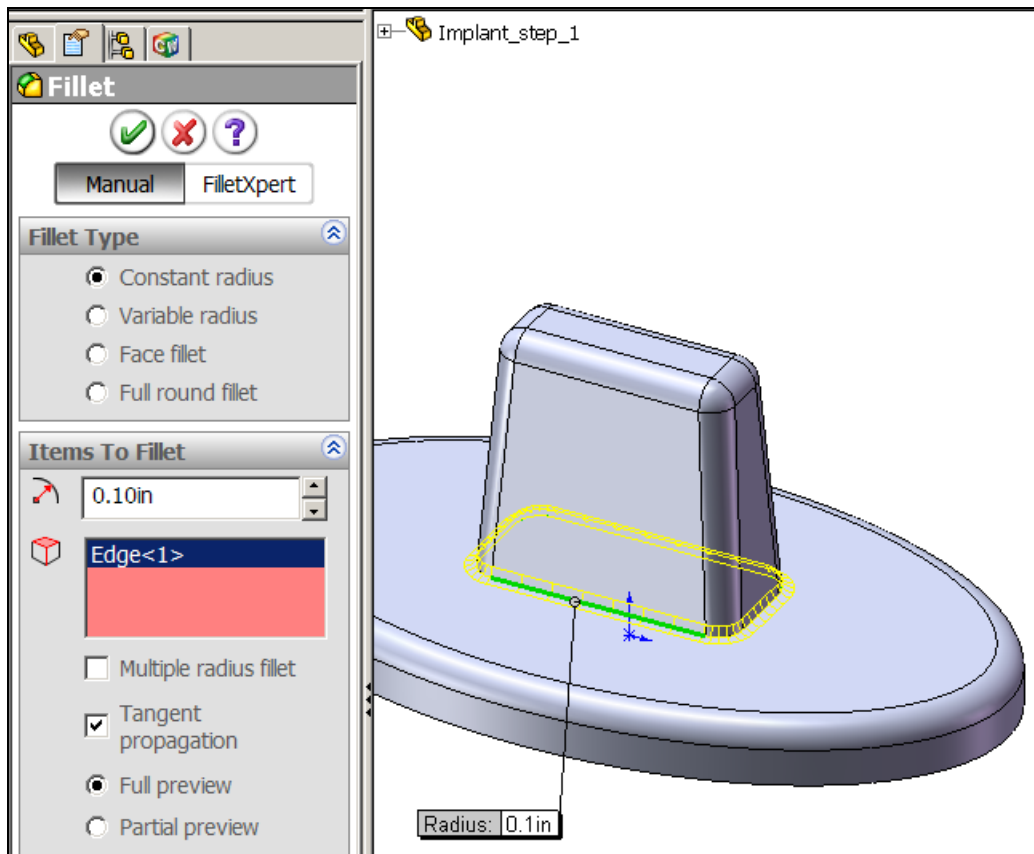


Example: Implant-Cement-Bone Study (draft 1)

Add the cement layer

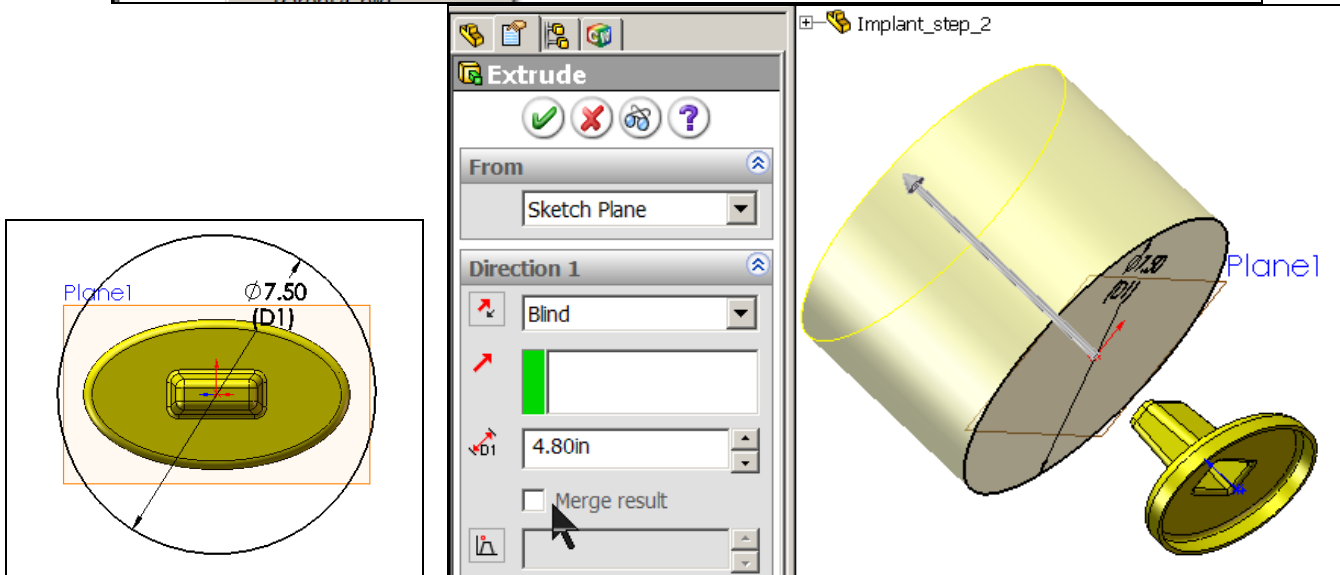
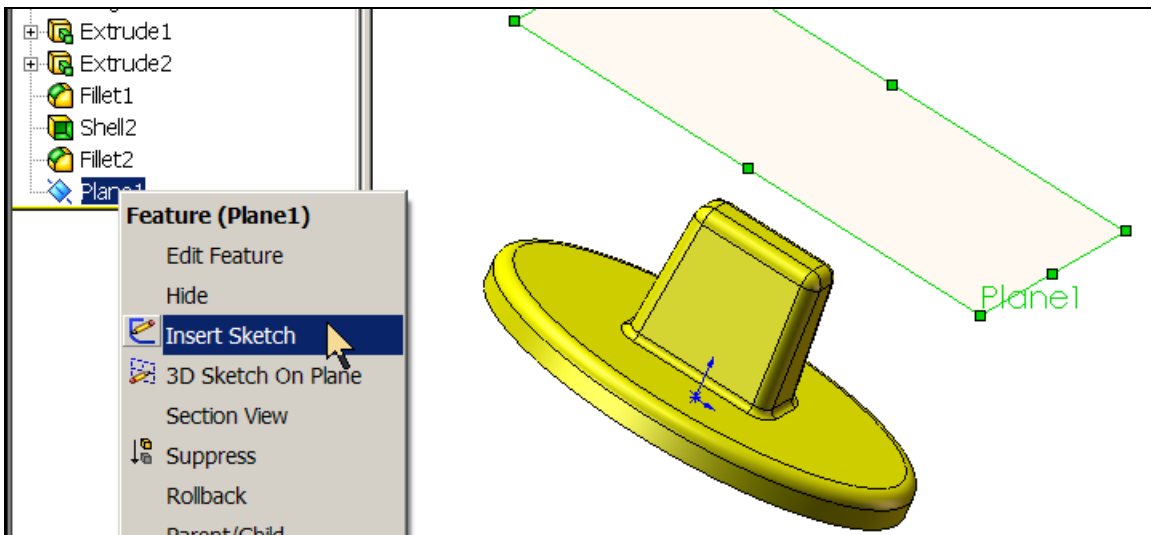
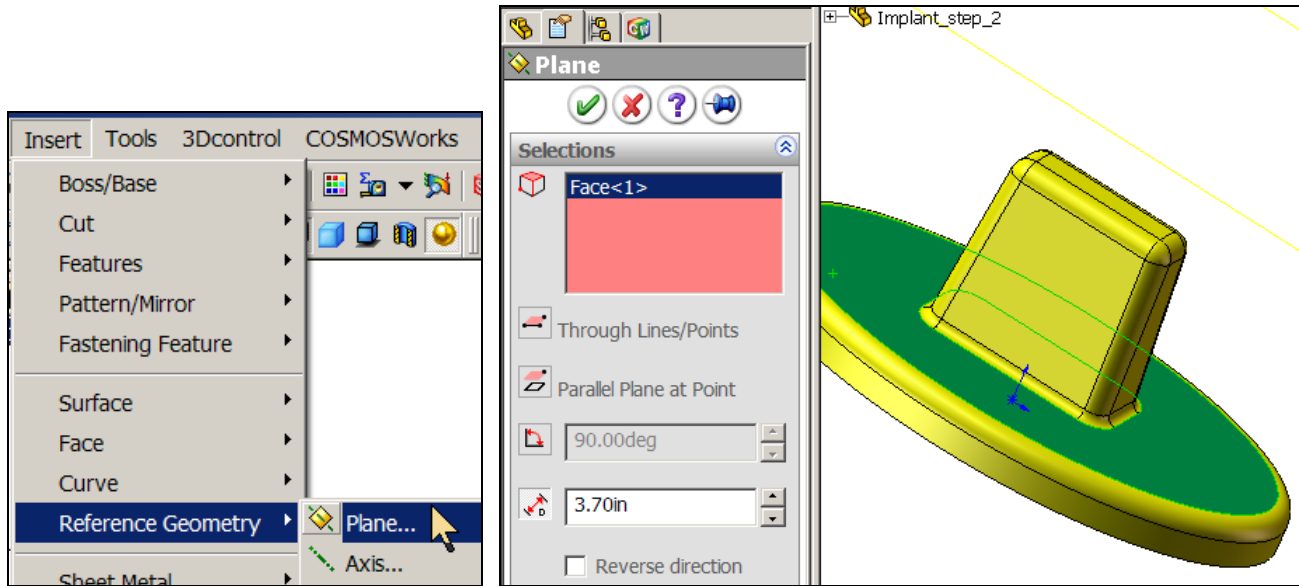


Example: Implant-Cement-Bone Study (draft 1)

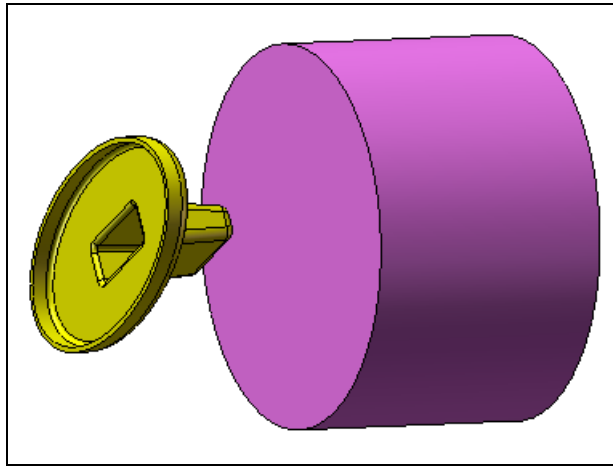


Add a mating bone solid

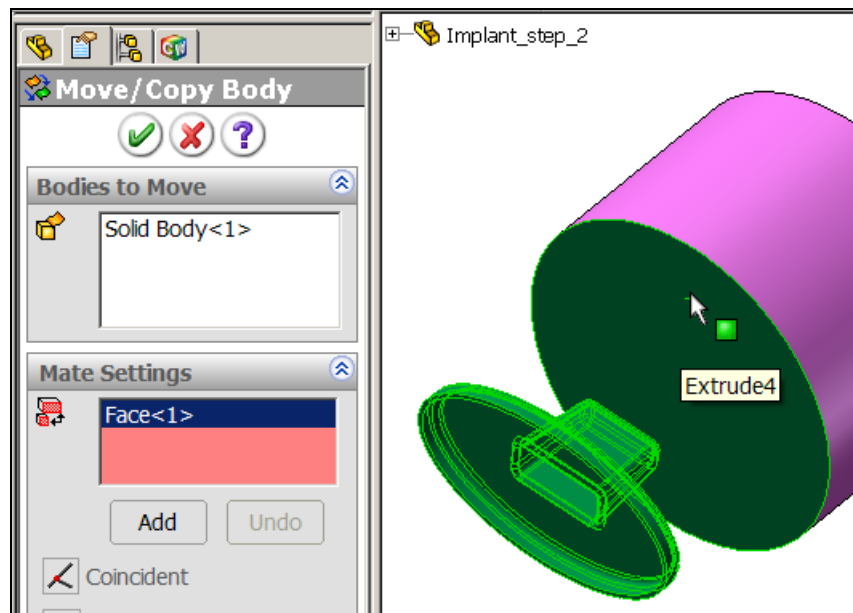
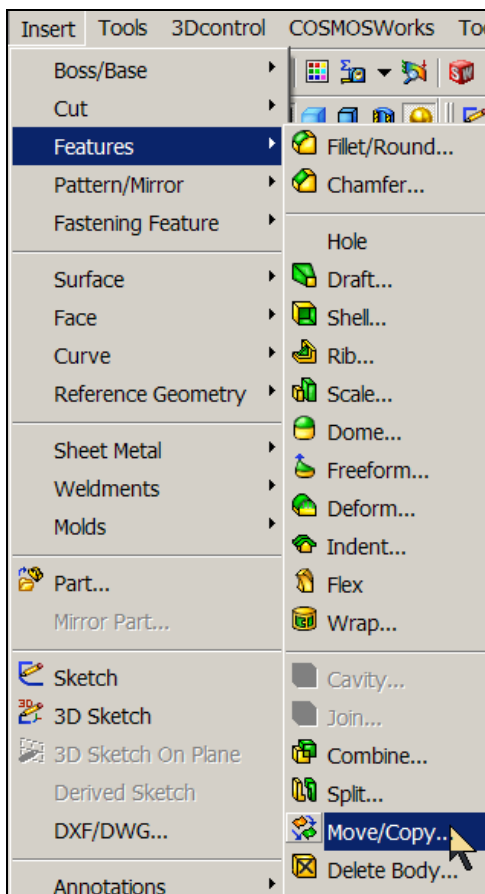
Example: Implant-Cement-Bone Study (draft 1)



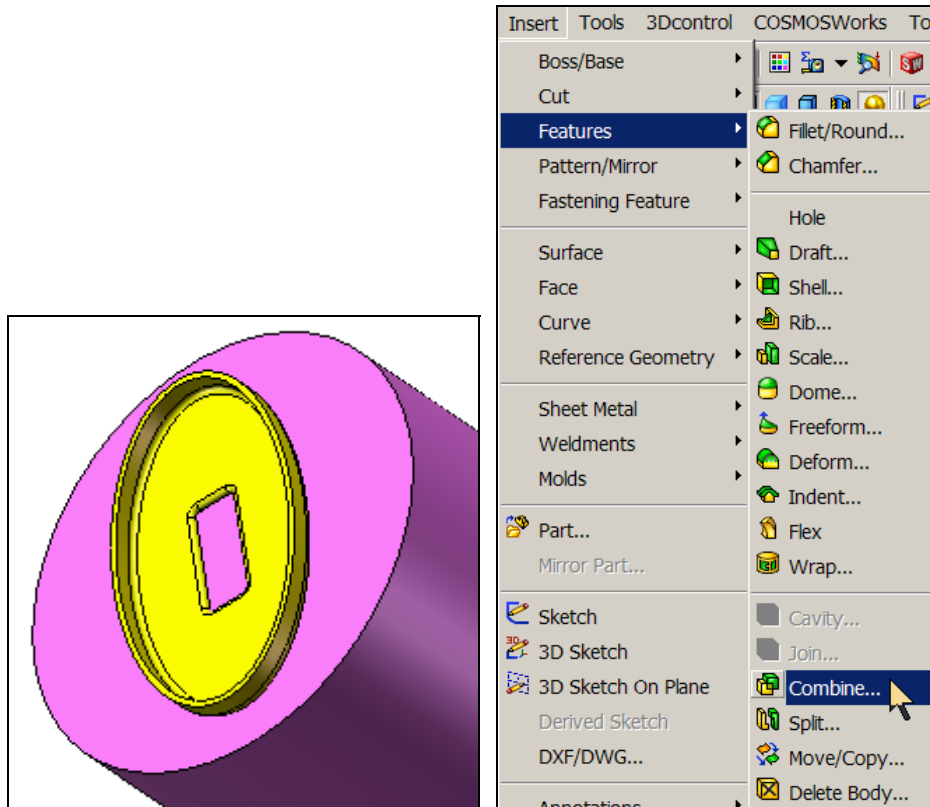
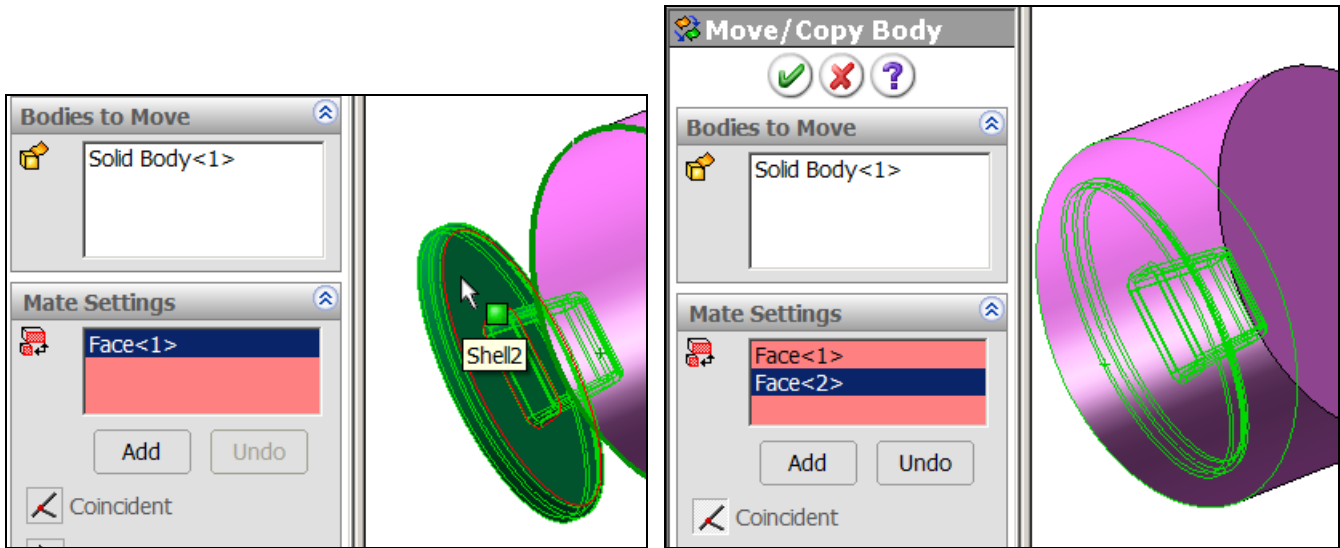
Example: Implant-Cement-Bone Study (draft 1)



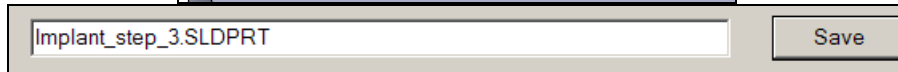
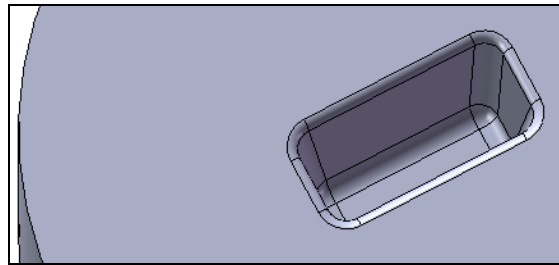
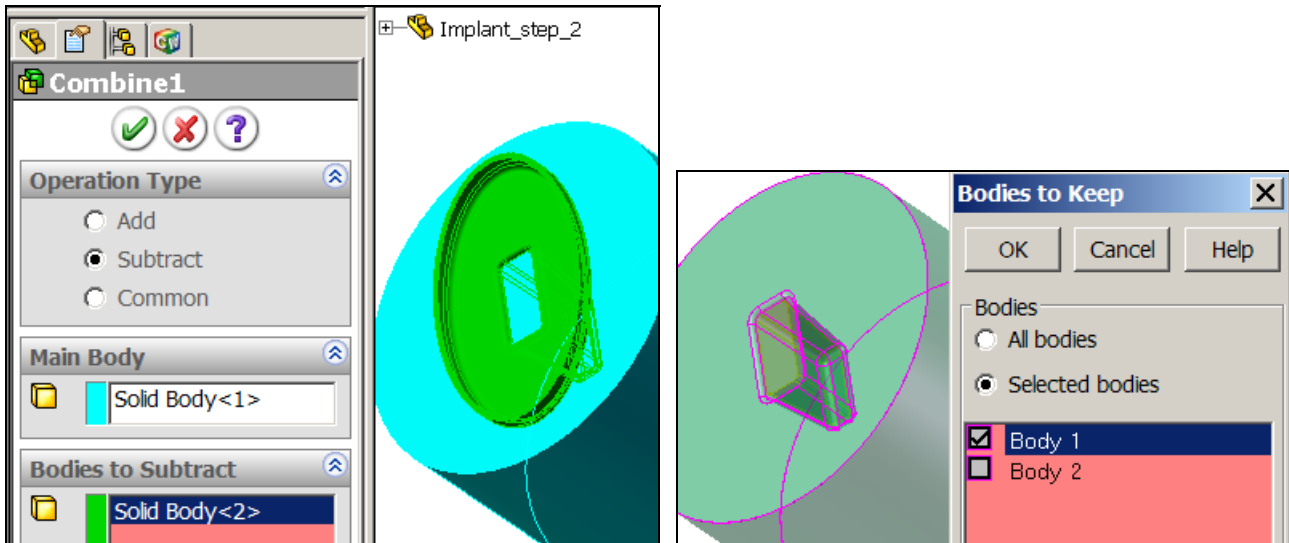
Prepare to remove the cement volume from the bone



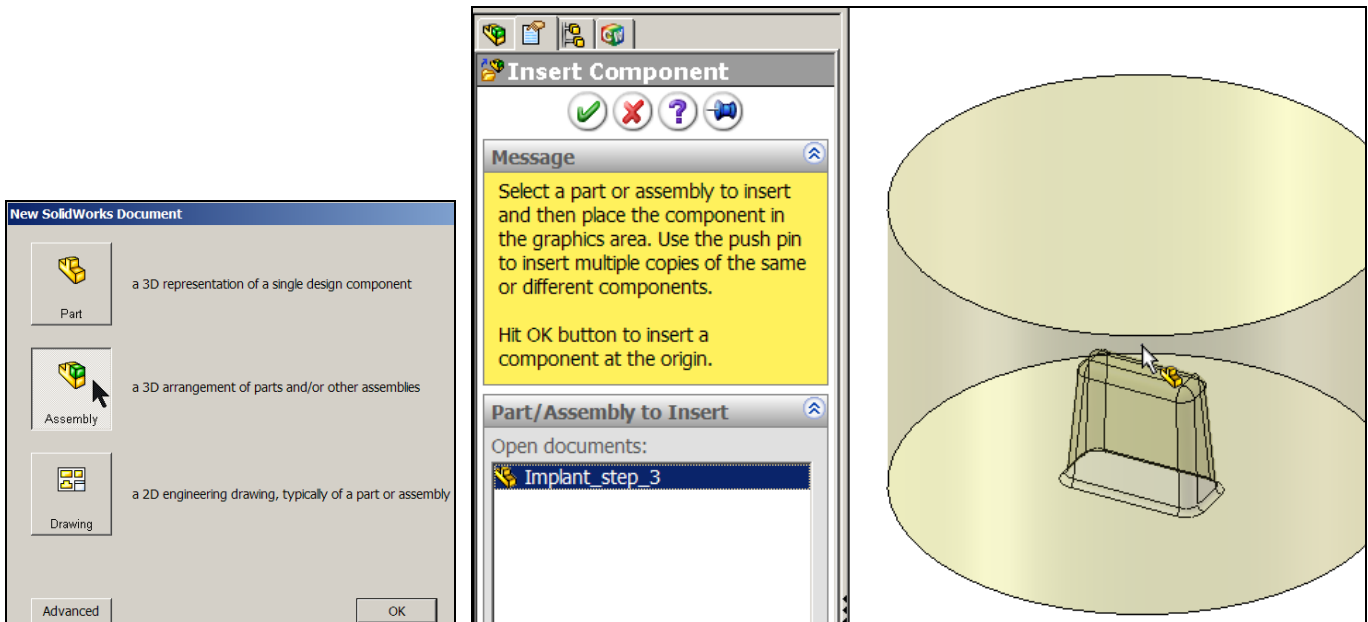
Example: Implant-Cement-Bone Study (draft 1)



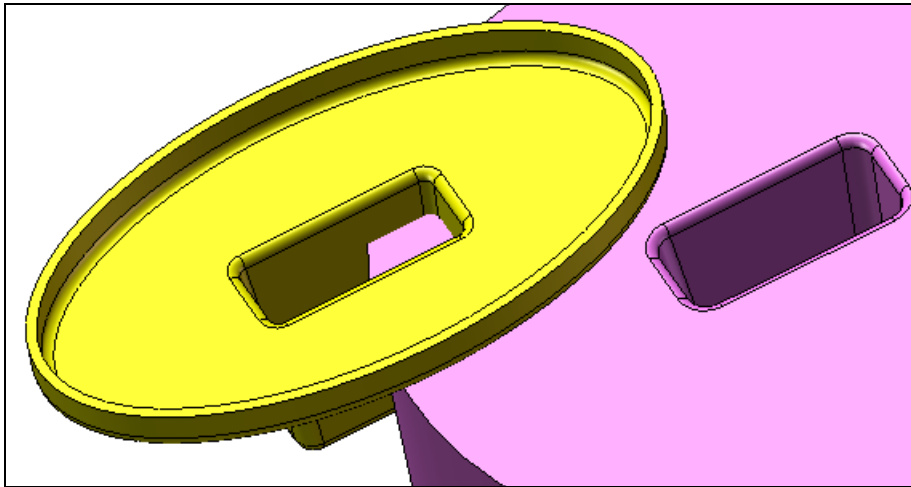
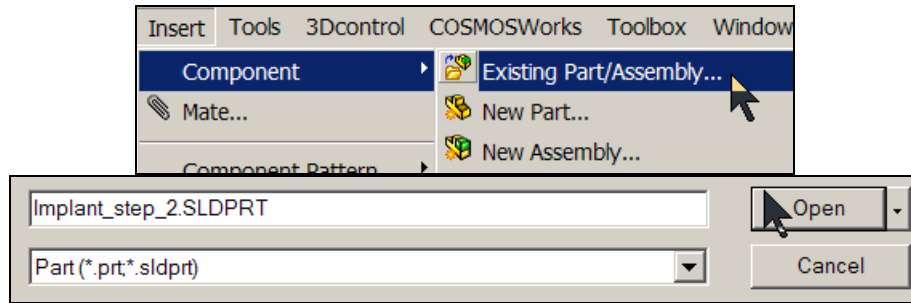
Example: Implant-Cement-Bone Study (draft 1)



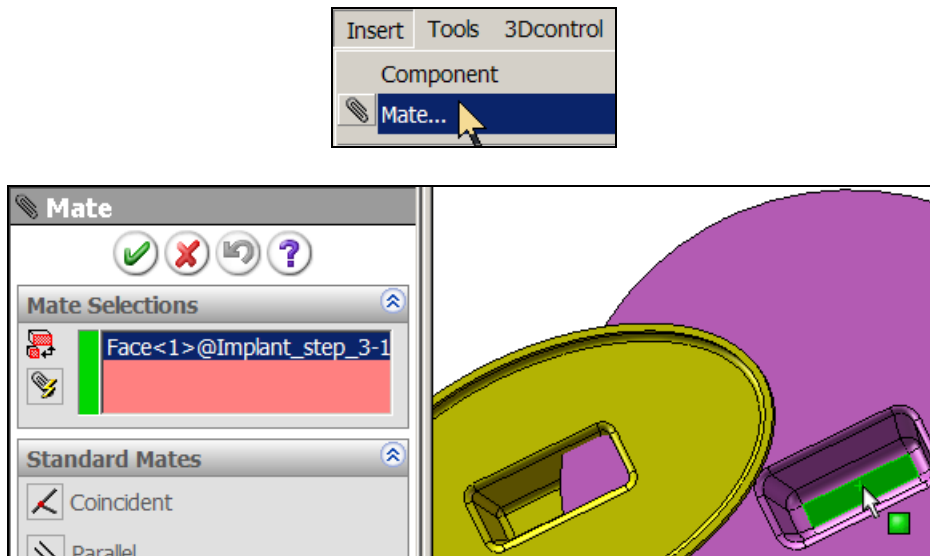
Build an assembly for stress analysis



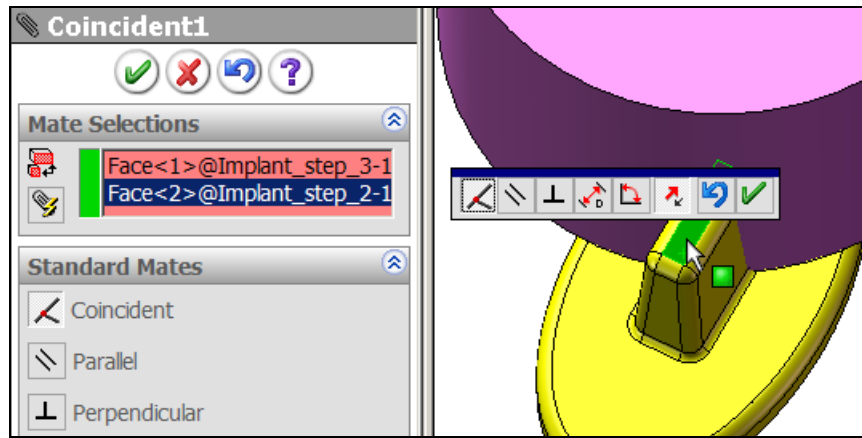
Example: Implant-Cement-Bone Study (draft 1)



Mate the cement to the bone

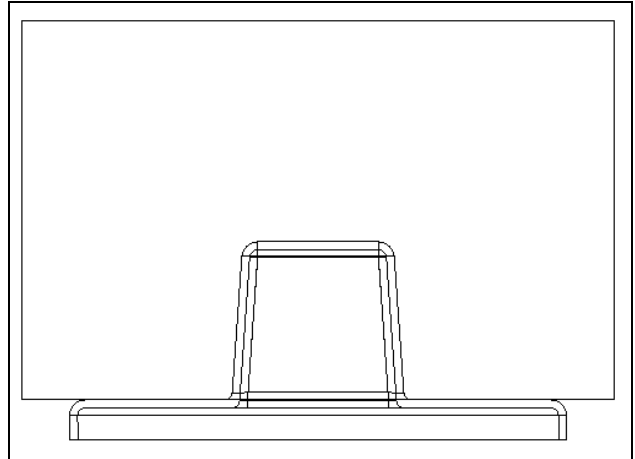
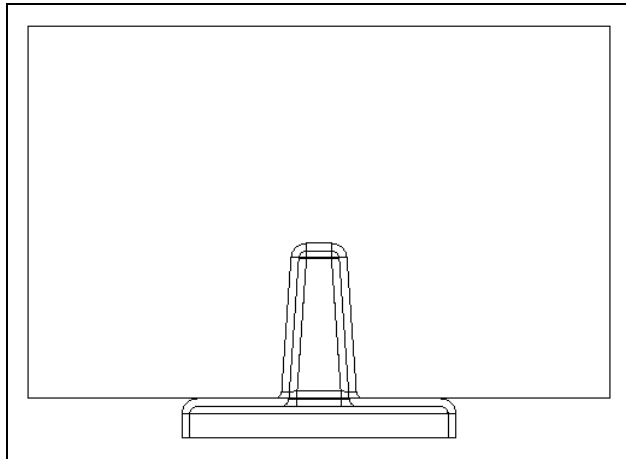
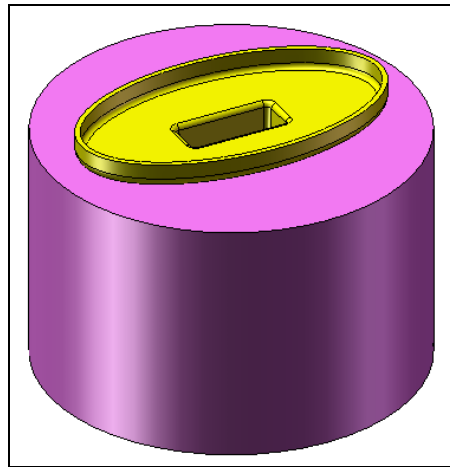
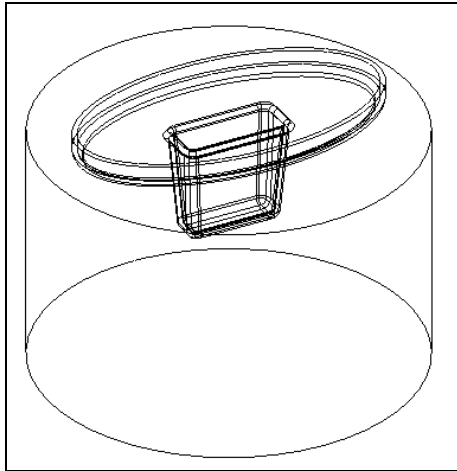


Example: Implant-Cement-Bone Study (draft 1)



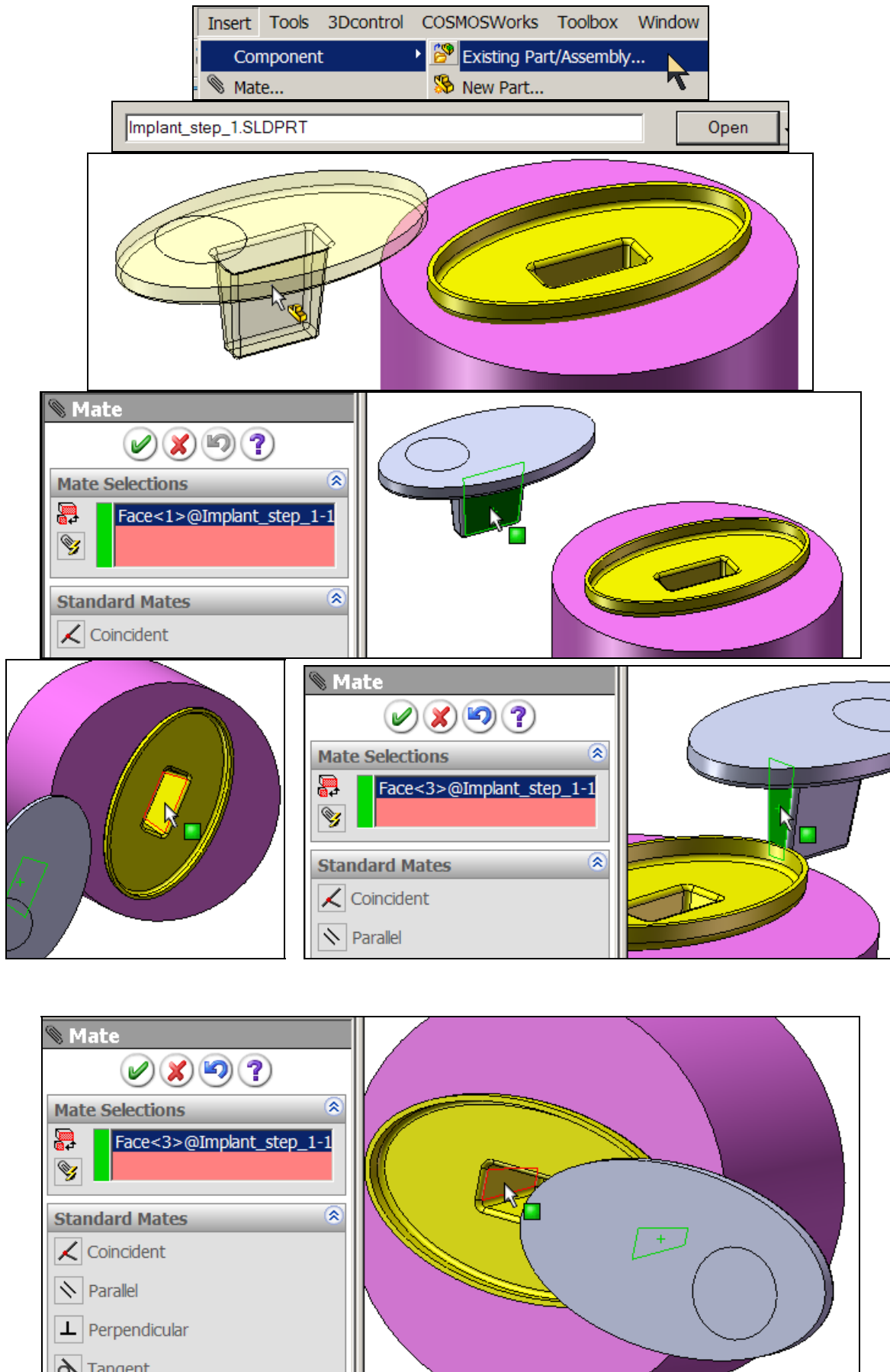
images out of order here (missing)

two more mates

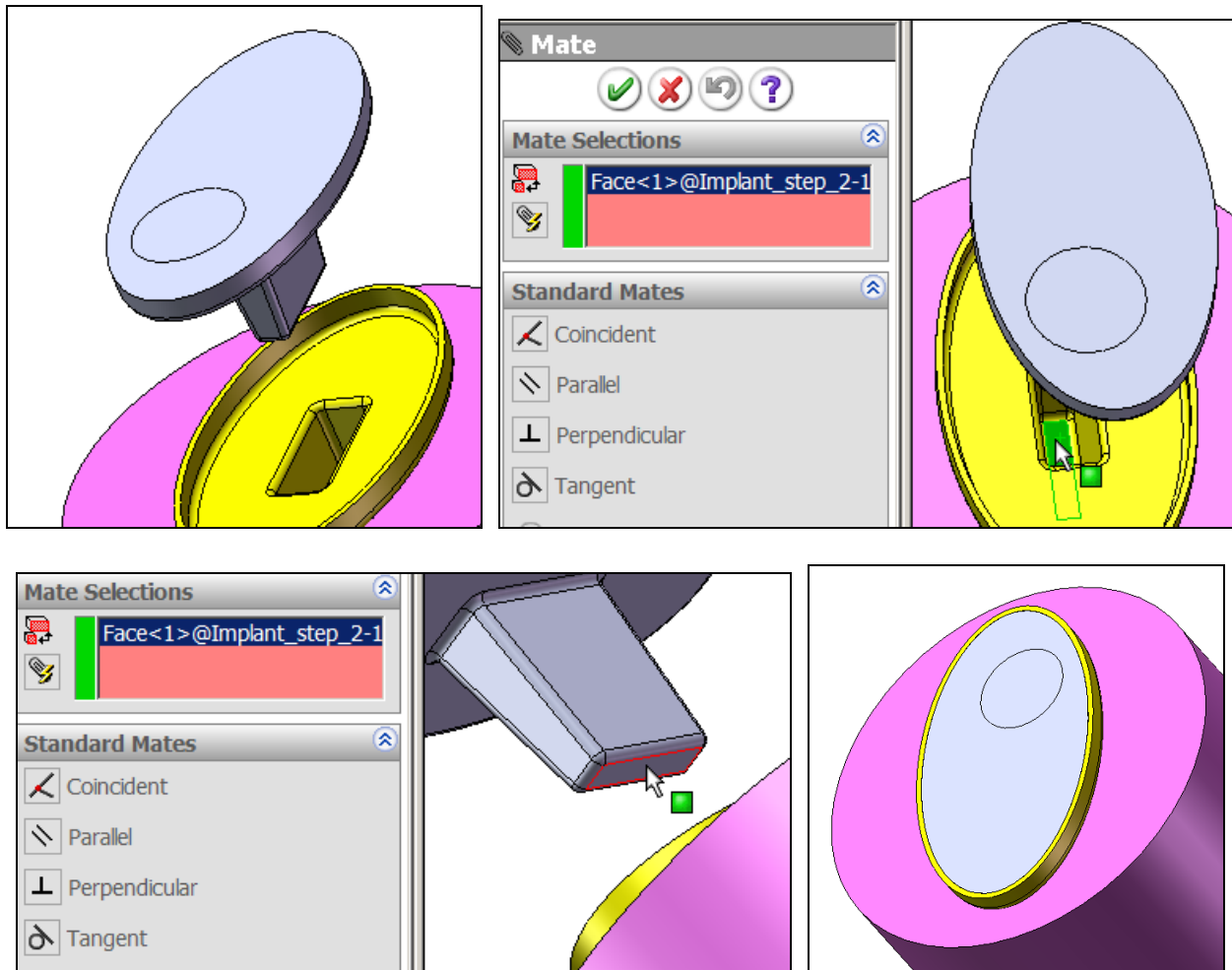


Add the implant solid to the assembly

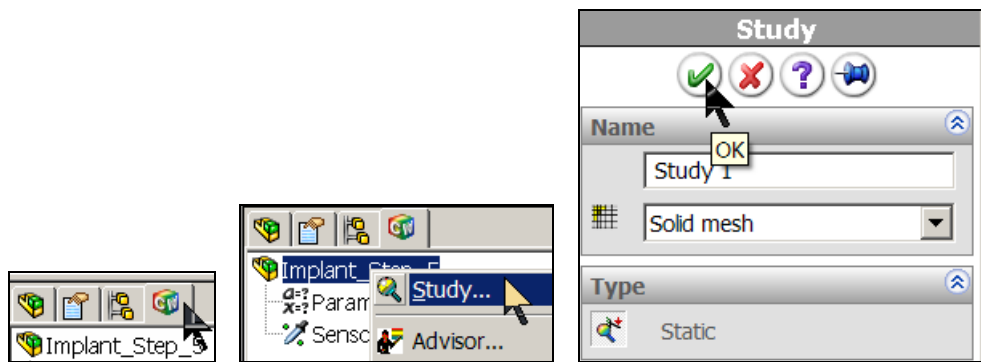
Example: Implant-Cement-Bone Study (draft 1)



Example: Implant-Cement-Bone Study (draft 1)

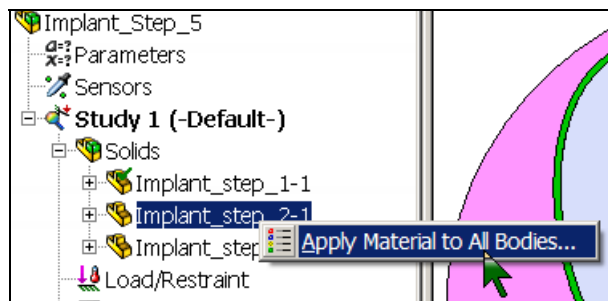
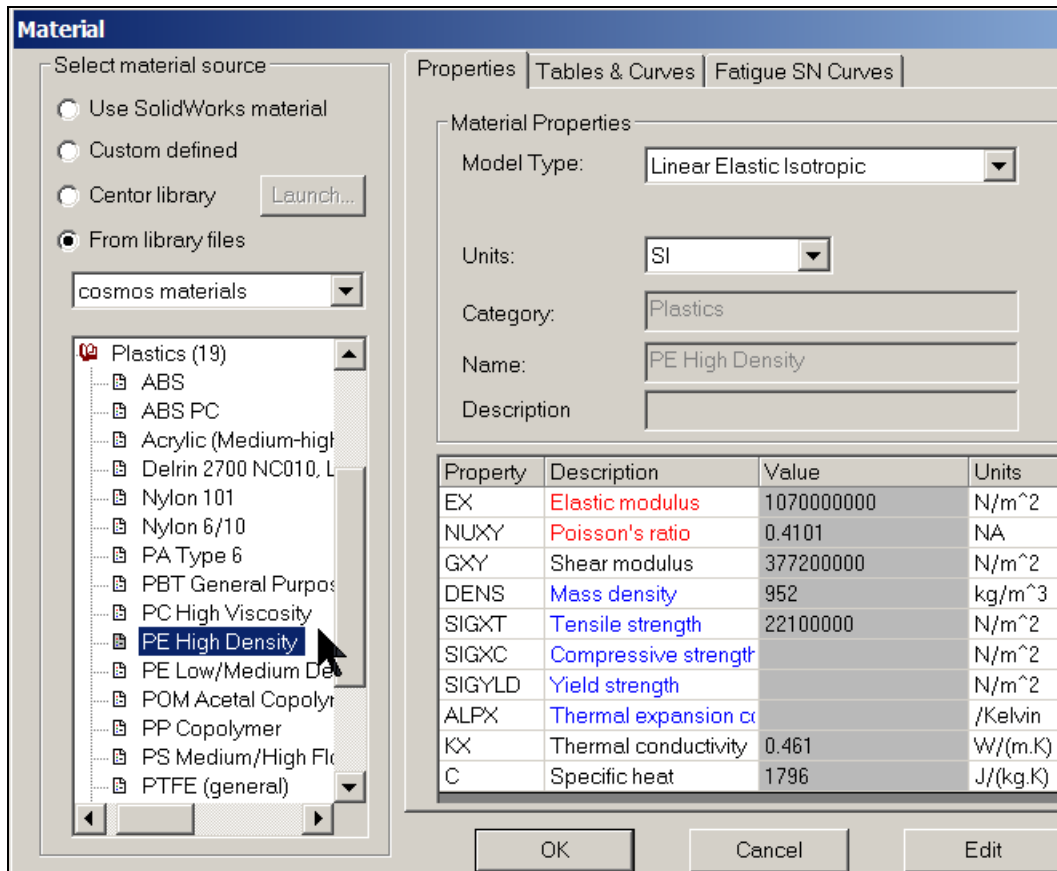
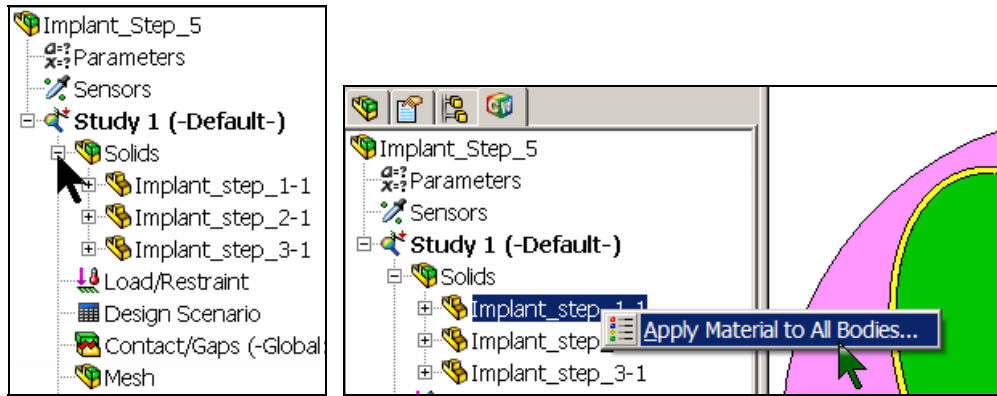


Conduct stress analysis of assembly



Set each of the three material region properties

Example: Implant-Cement-Bone Study (draft 1)



Example: Implant-Cement-Bone Study (draft 1)

Material

Select material source

- Use SolidWorks material
- Custom defined
- Centor library Launch...
- From library files

cosmos materials

- Plastics (19)
 - ABS
 - ABS PC
 - Acrylic (Medium-Density)
 - Delrin 2700 NC01
 - Nylon 101
 - Nylon 6/10
 - PA Type 6
 - PBT General Purpose
 - PC High Viscosity
 - PE High Density
 - PE Low/Medium Density
 - POM Acetal Copolymer
 - PP Copolymer
 - PS Medium/High Impact
 - PTFE (general)

Properties | Tables & Curves | Fatigue SN Curves

Material Properties

Model Type: Linear Elastic Isotropic

Units: SI

Category: Plastics

Name: Cement

Description:

Property	Description	Value	Units
EX	Elastic modulus	1070000000	N/m ²
NUXY	Poisson's ratio	0.4101	NA
GXY	Shear modulus	377200000	N/m ²
DENS	Mass density	952	kg/m ³
SIGXT	Tensile strength	15000000	N/m ²
SIGXC	Compressive strength		N/m ²
SIGYLD	Yield strength		N/m ²
ALPX	Thermal expansion coefficient		/Kelvin
KX	Thermal conductivity	0.461	W/(m.K)
C	Specific heat	1796	J/(kg.K)

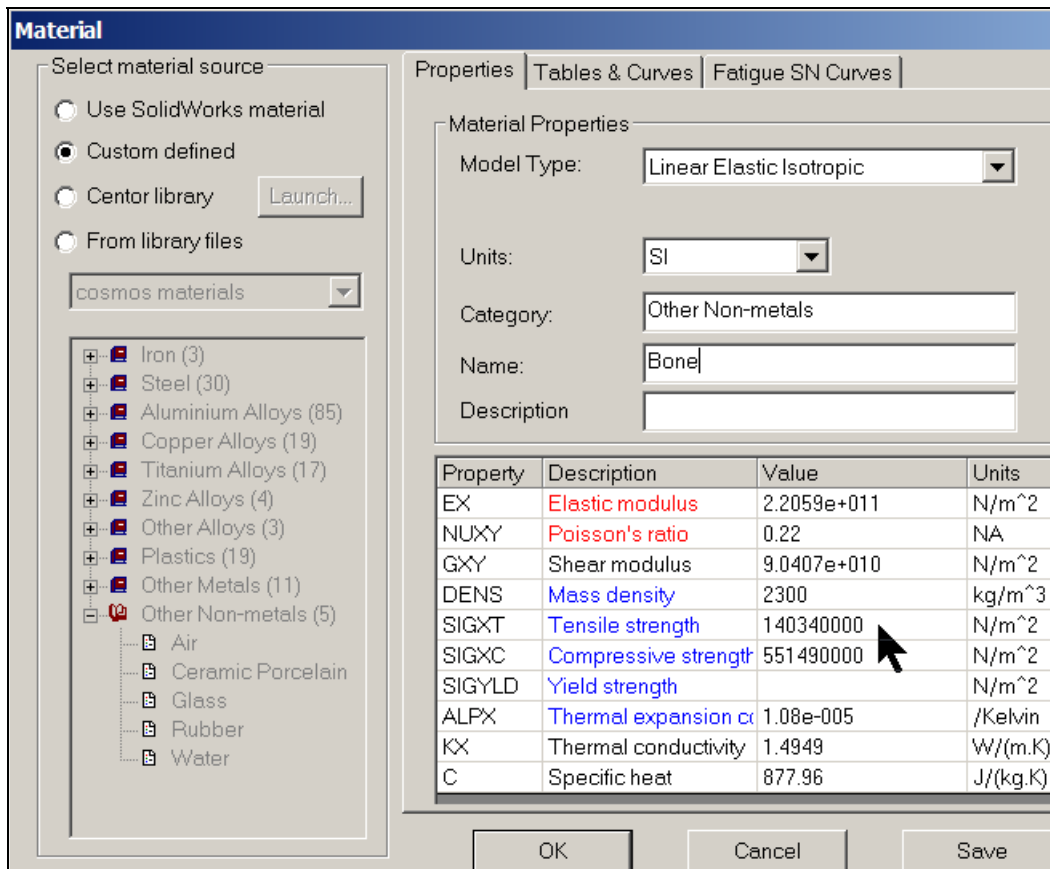
OK Cancel Save

Implant_Step_5

- Parameters
- Sensors
- Study 1 (-Default-)
 - Solids
 - Implant_step_1-1
 - Implant_step_2-1
 - Implant_step_3-1
 - Load/Restraints
 - Design Scenario

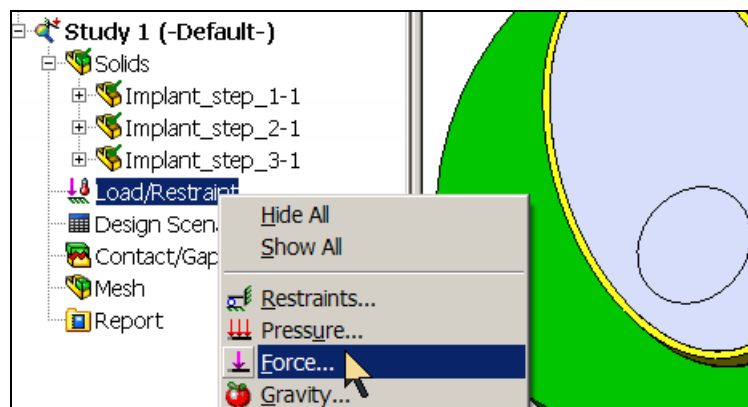
Apply Material to All Bodies...

Example: Implant-Cement-Bone Study (draft 1)

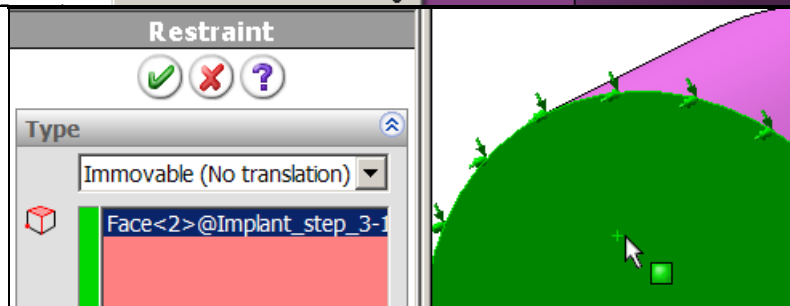
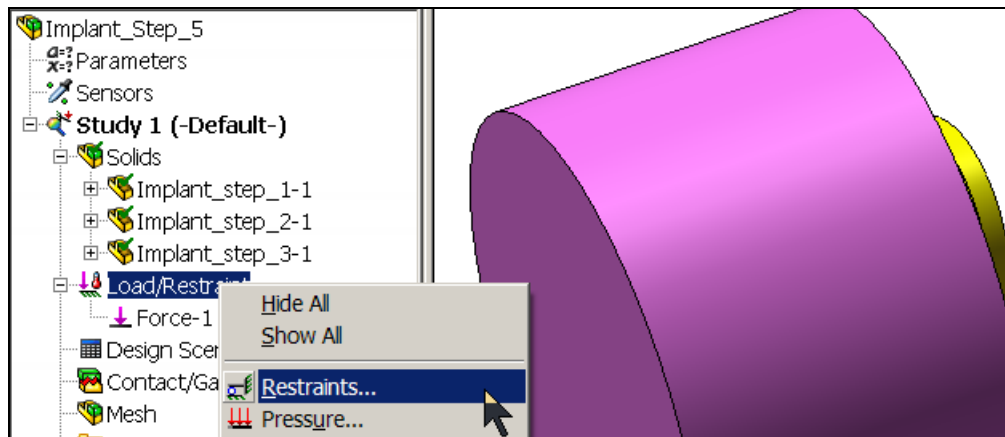
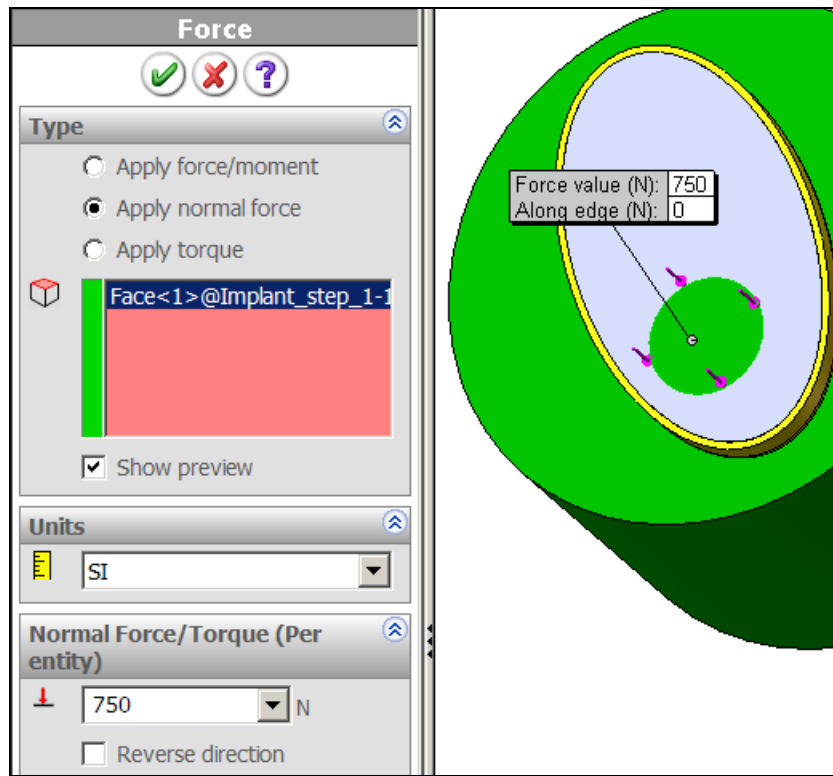


Now set (assumed) loads and restraints

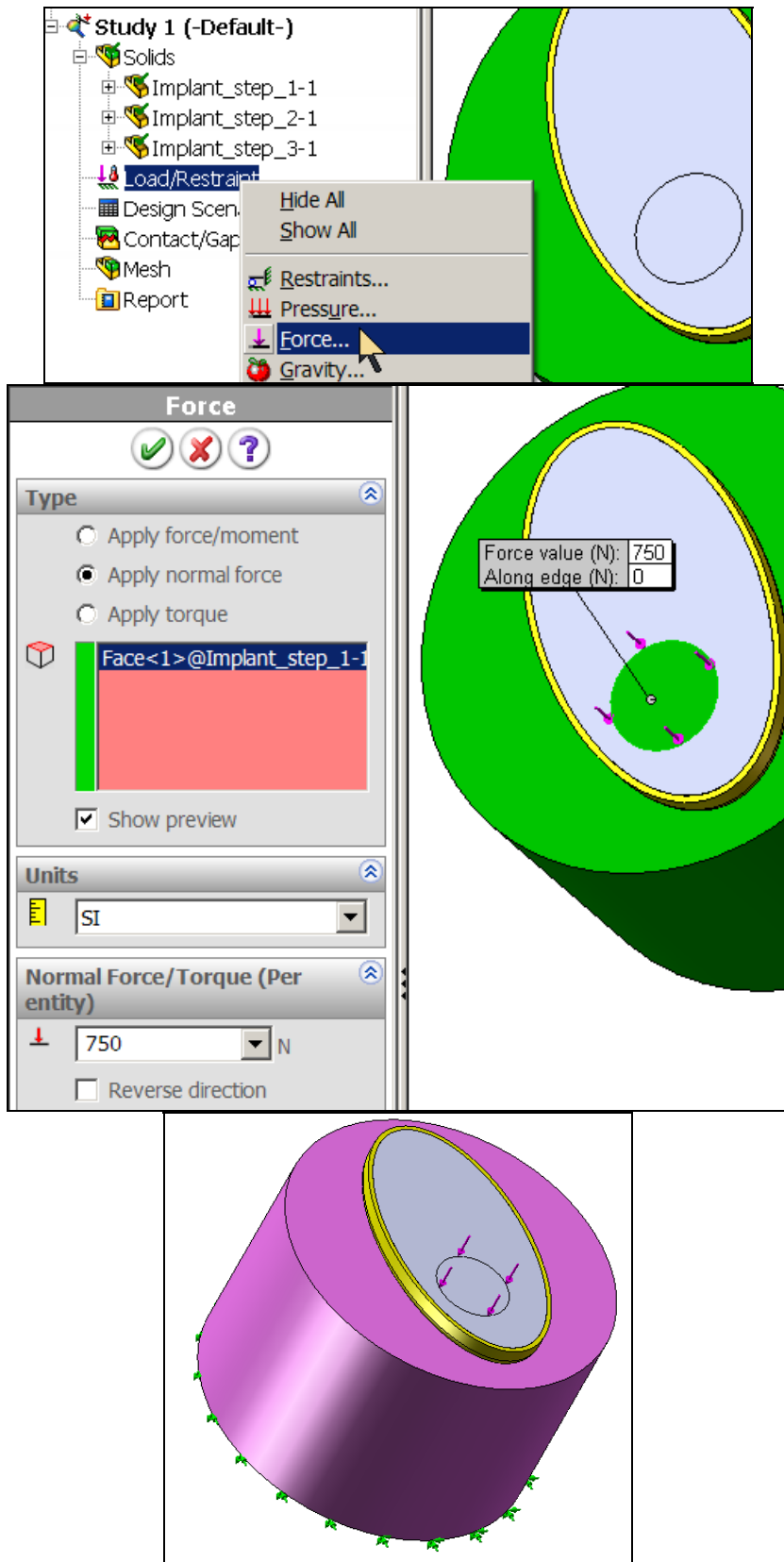
(The touching material interfaces are automatically bonded.)



Example: Implant-Cement-Bone Study (draft 1)

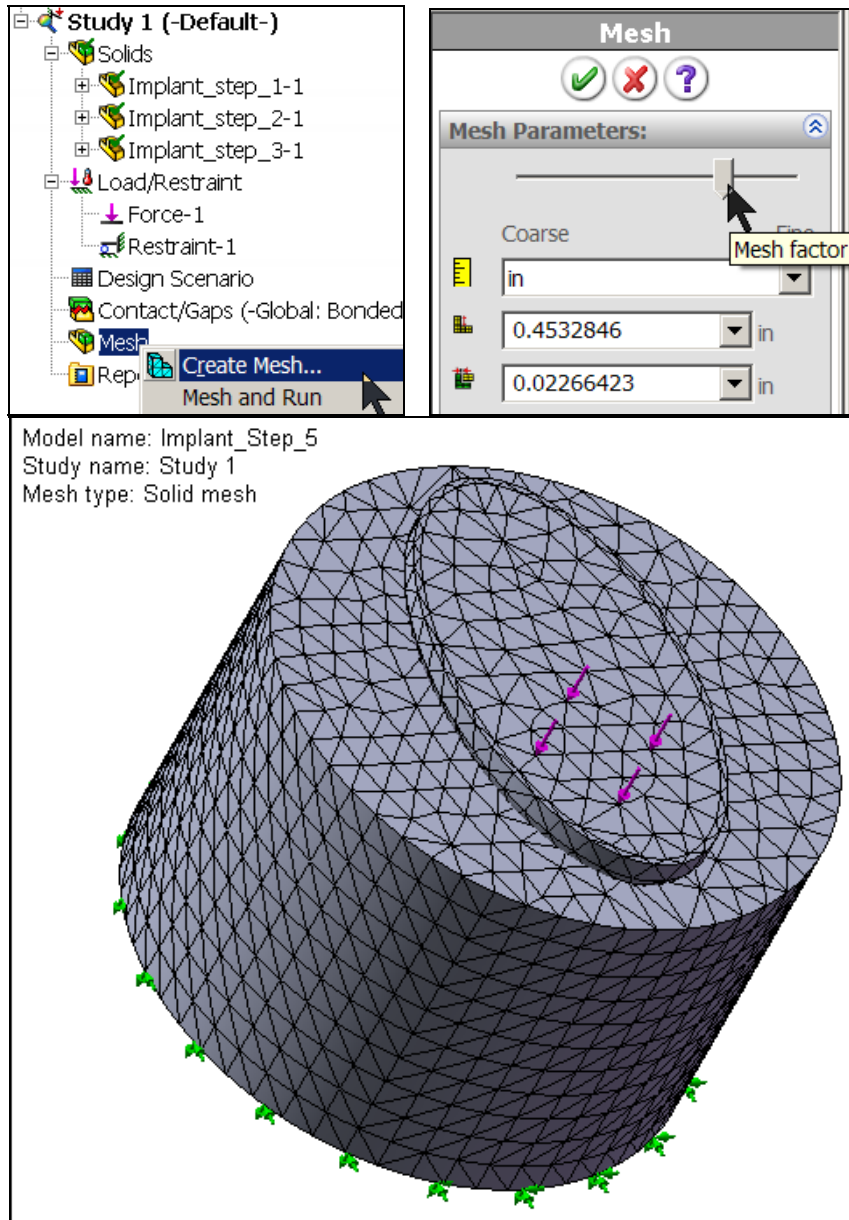


Example: Implant-Cement-Bone Study (draft 1)



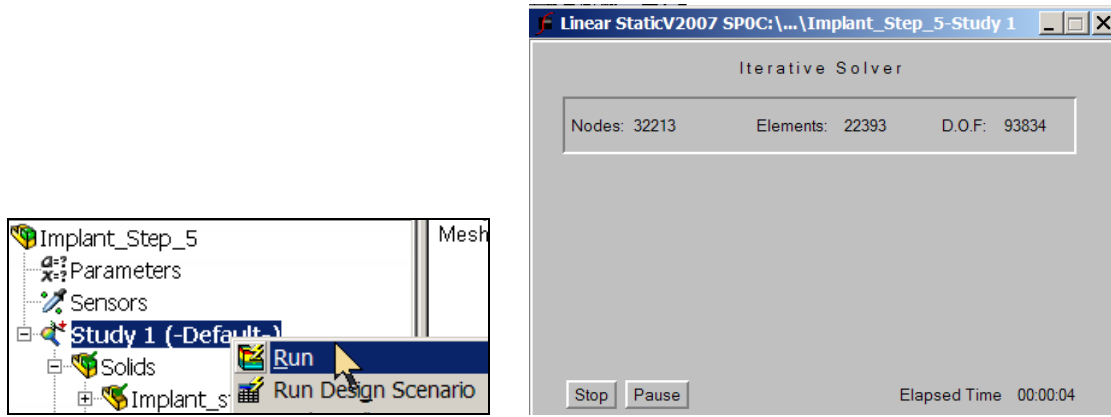
Example: Implant-Cement-Bone Study (draft 1)

Build a mesh

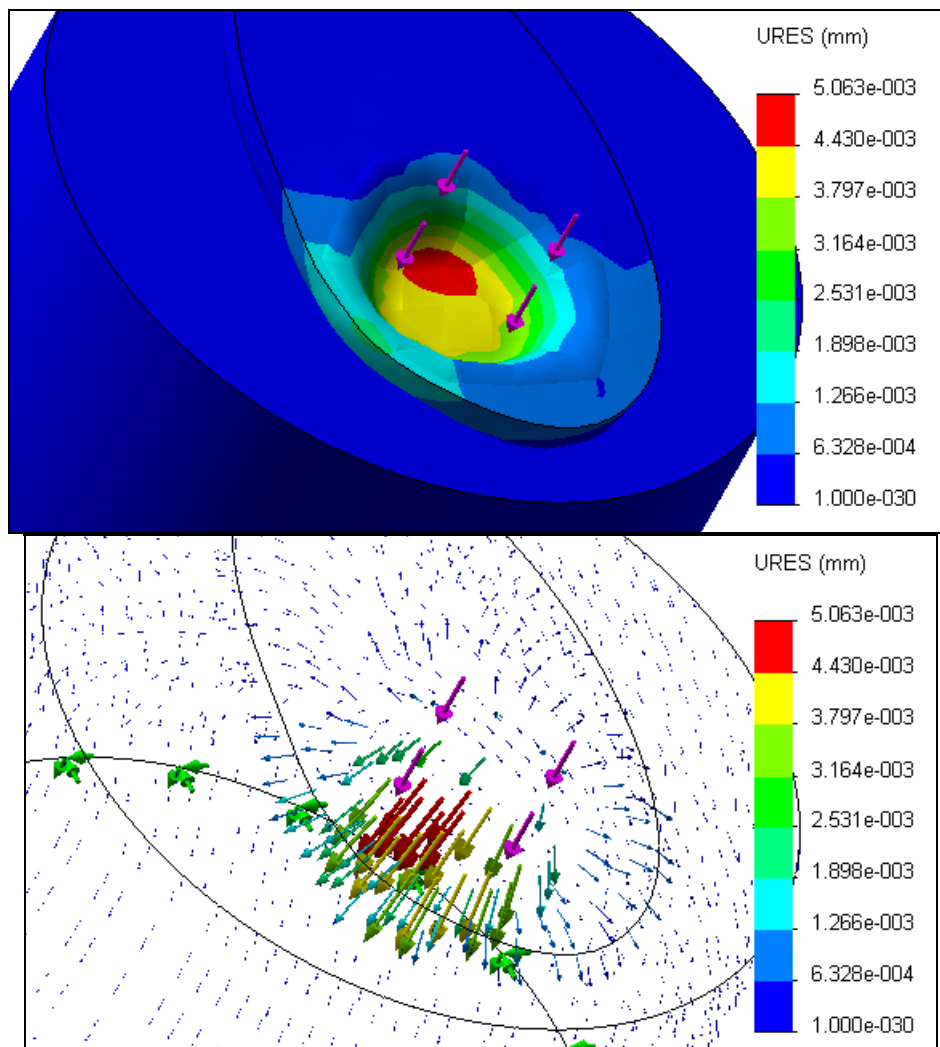


Run the model solution

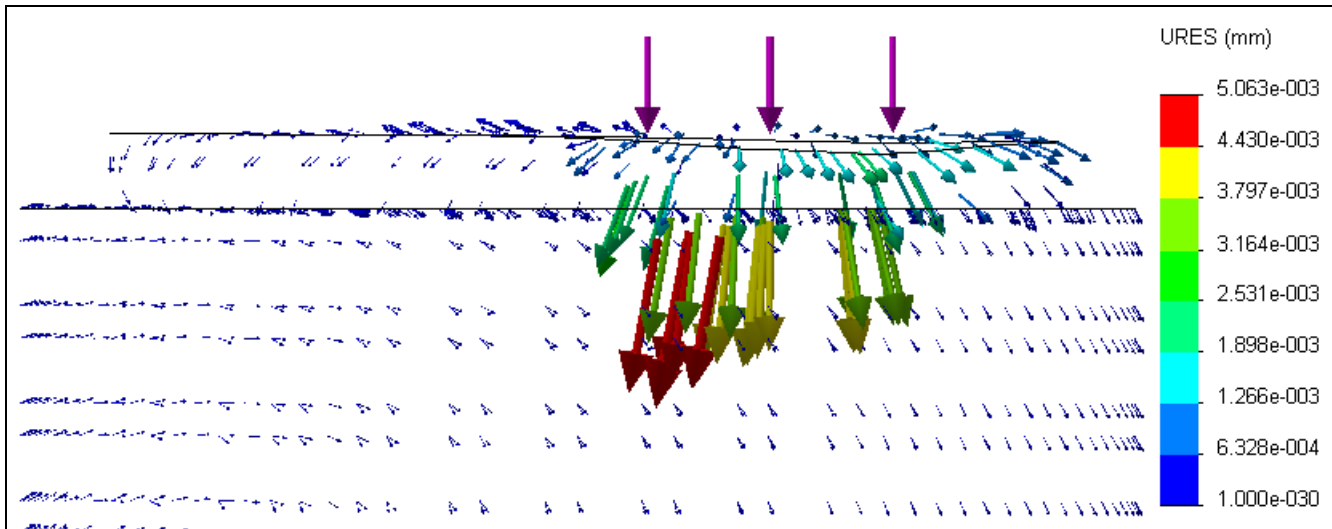
Example: Implant-Cement-Bone Study (draft 1)



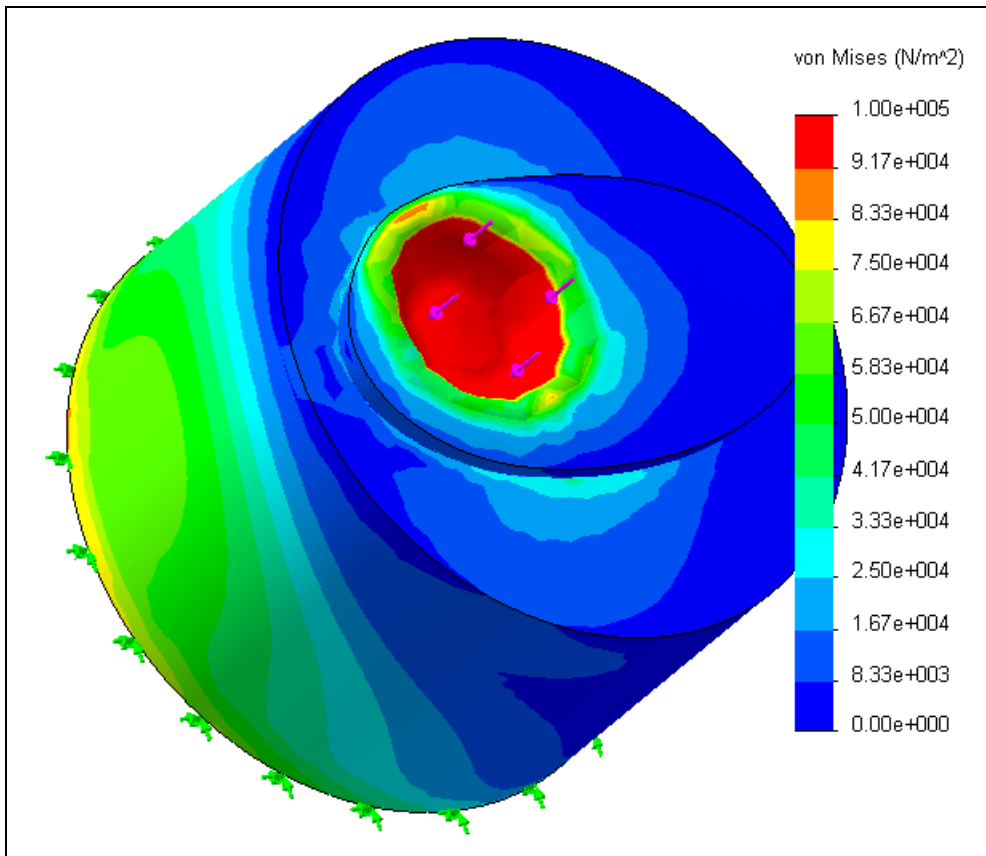
Plot the displacements



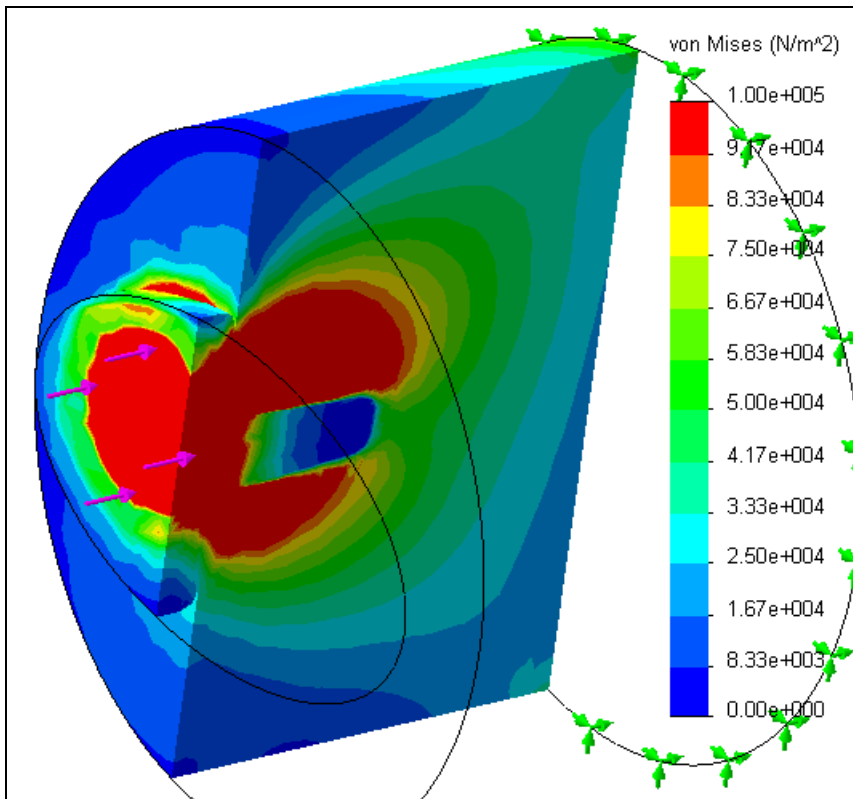
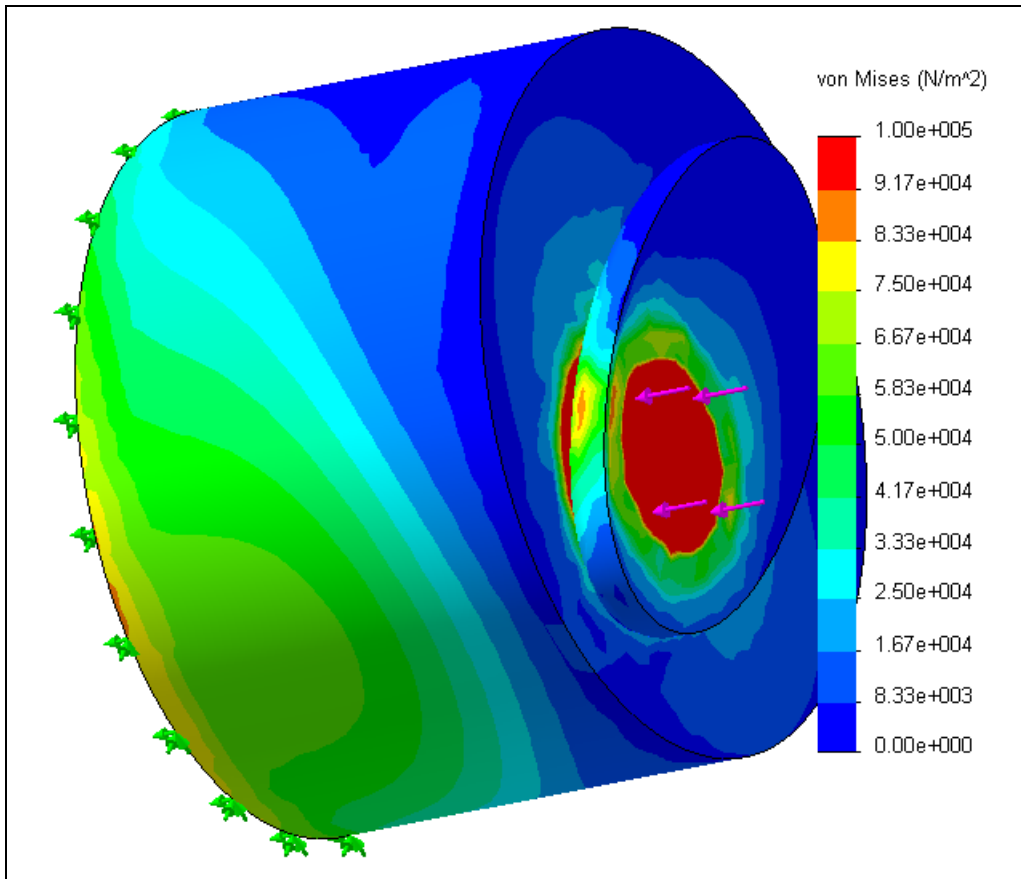
Example: Implant-Cement-Bone Study (draft 1)



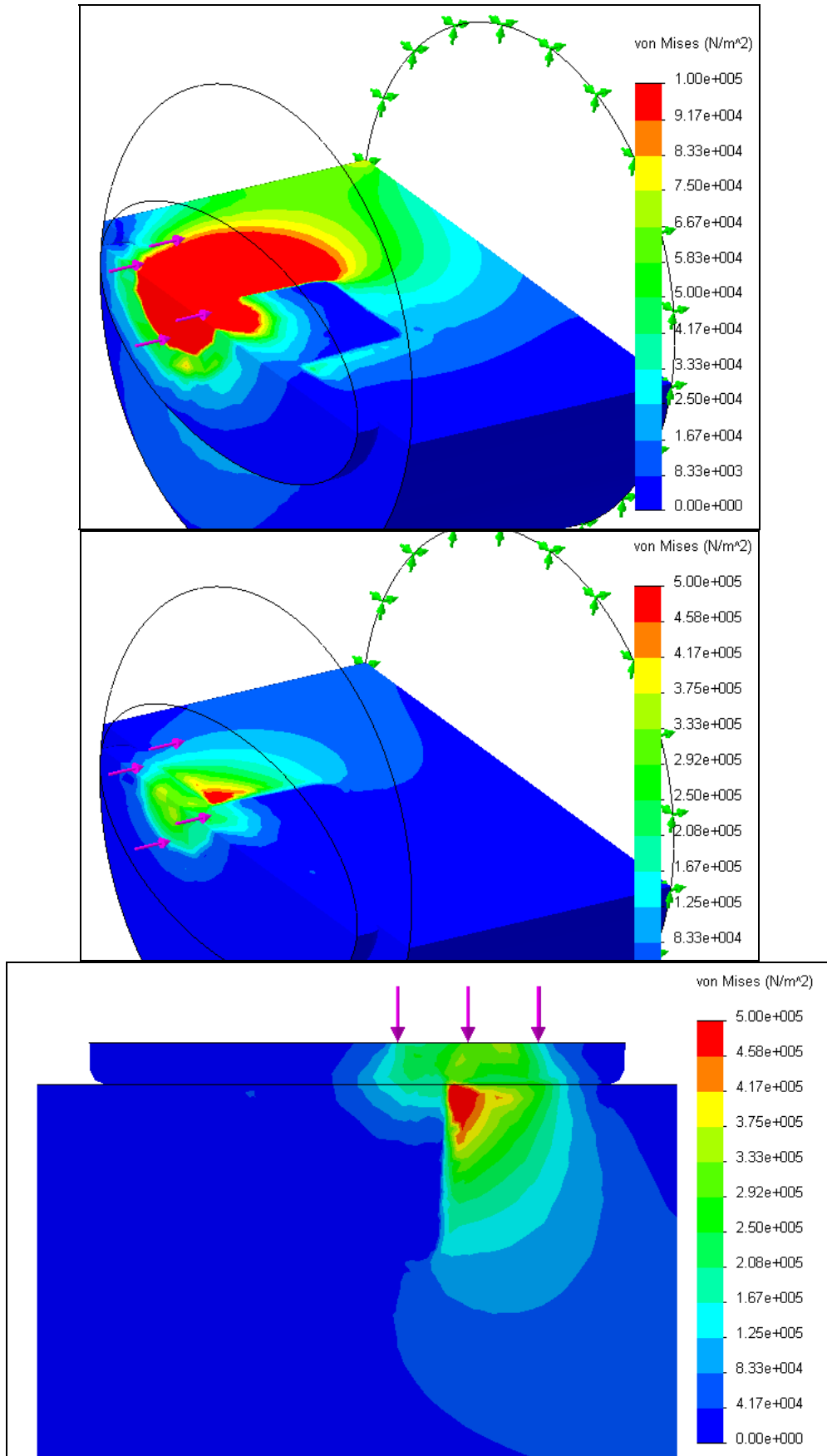
Examine Stresses



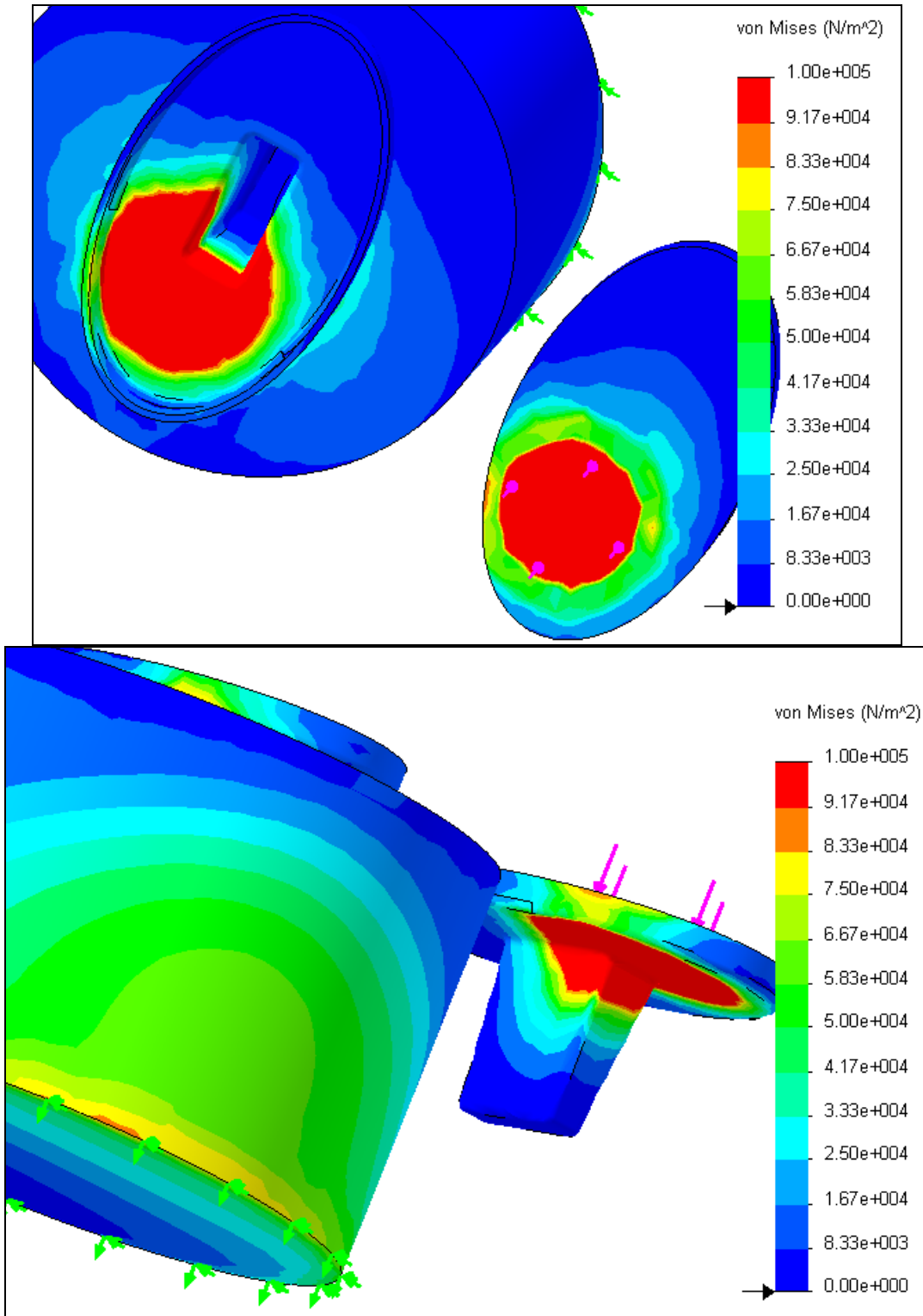
Example: Implant-Cement-Bone Study (draft 1)



Example: Implant-Cement-Bone Study (draft 1)



Example: Implant-Cement-Bone Study (draft 1)



Example: Implant-Cement-Bone Study (draft 1)

Plot the intensity (twice the max shear stress)

