



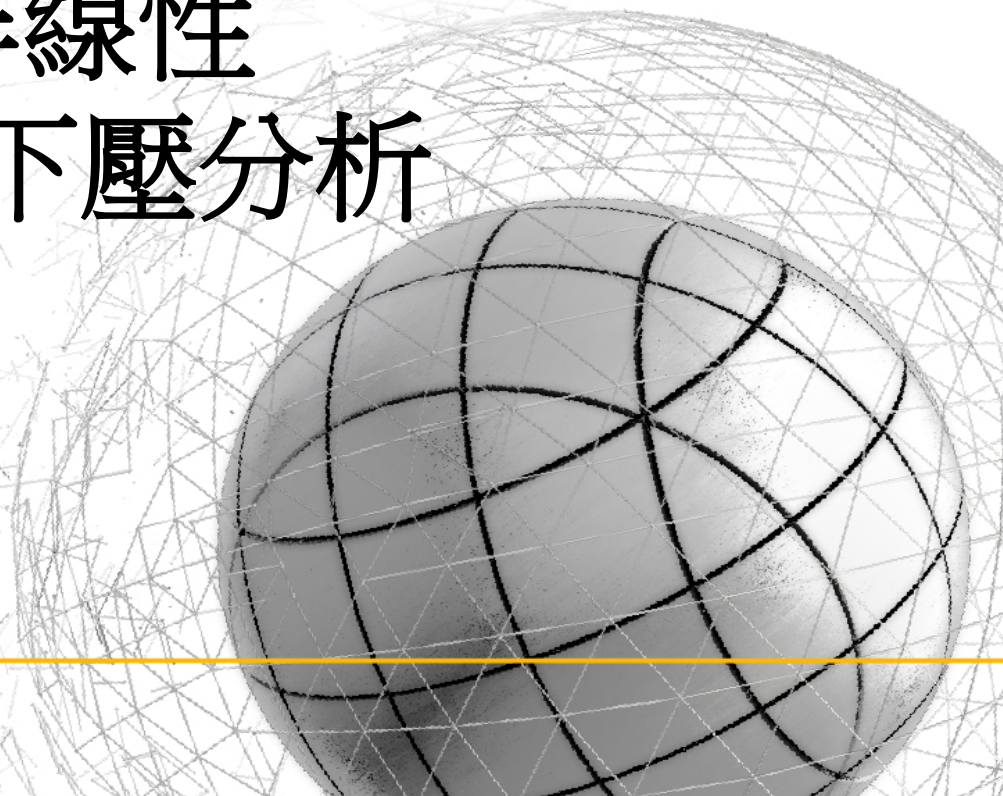
MIDAS

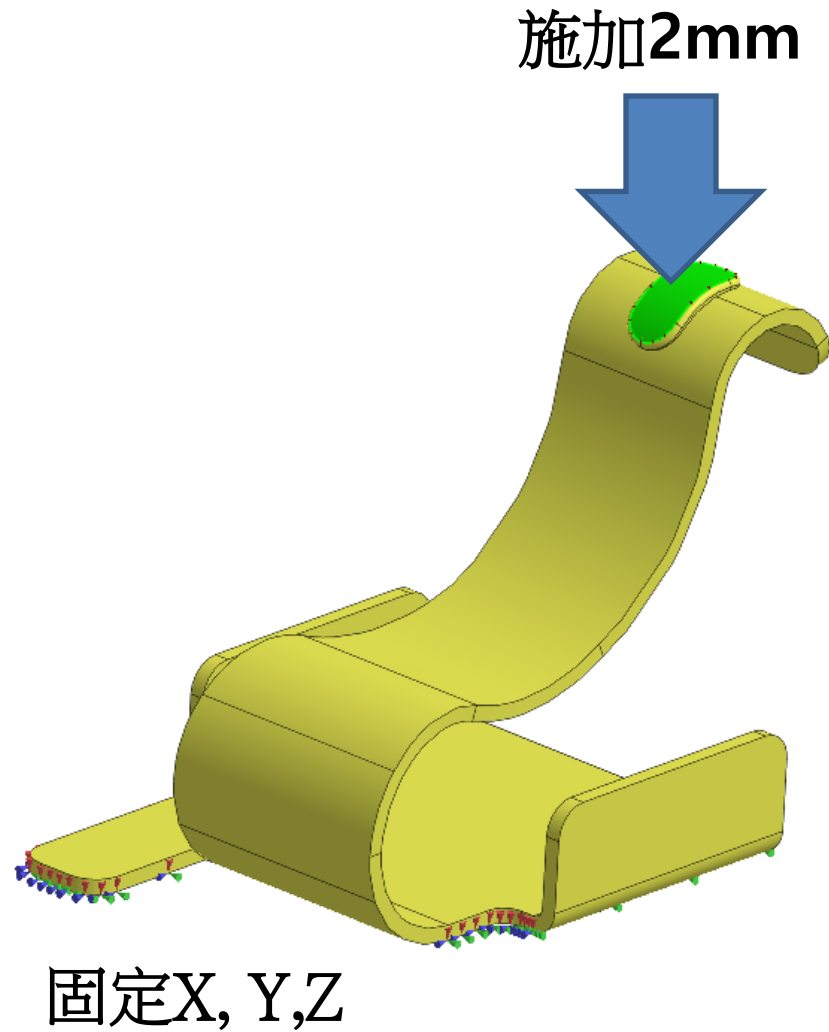
MESH FREE

材料非線性  
電池彈片下壓分析

Simple, but Everything.

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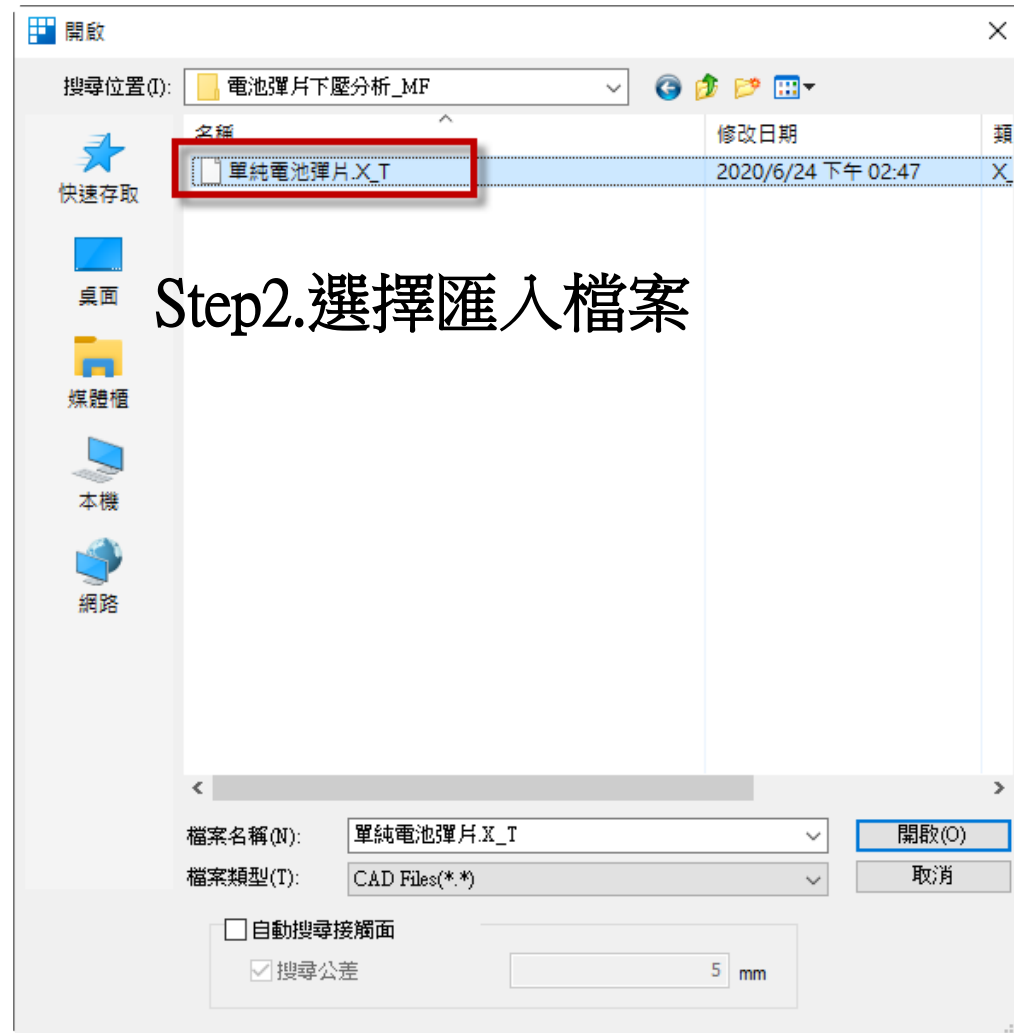




## Step1.匯入3D 模型

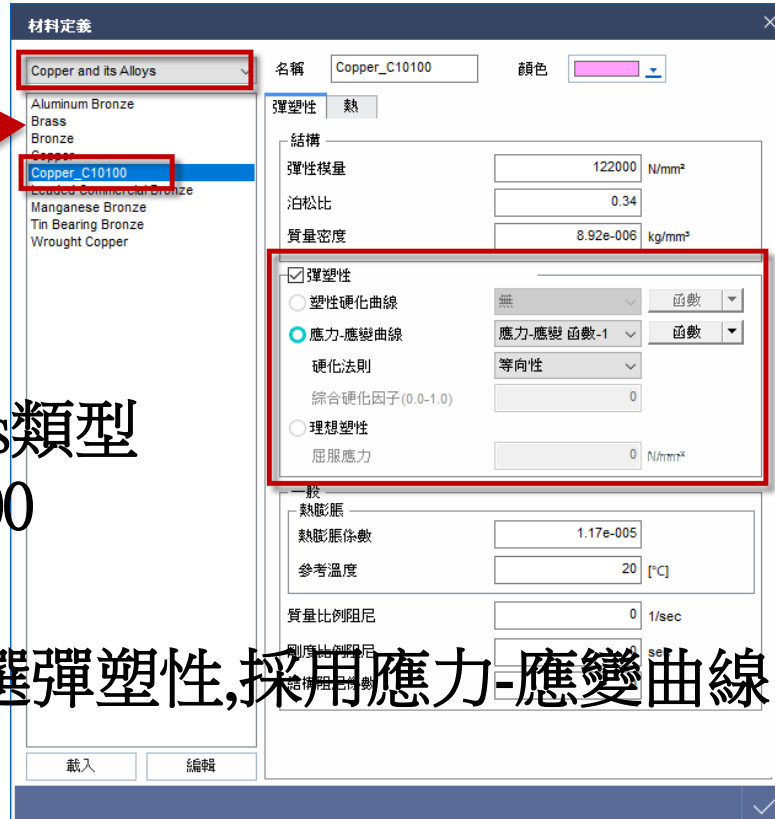
## MeshFree支援各類CAD 格式

Parasolid (9 - 29) Files (\*.x\_t;\*.xmt\_txt;\*.x\_b;\*.xmt\_bin)  
 ACIS (R1 - 2017 1.0) Files (\*.sat;\*.sab;\*.asat;\*.asab)  
 STEP (AP203, AP214, AP242) Files (\*.stp;\*.step)  
 IGES (Up to 5.3) Files (\*.igs;\*.iges)  
 Pro-E (16 - Creo 3.0) Files (\*.prt;\*.prt.\*;\*.asm;\*.asm.\*)  
 CATIA V4 (CATIA 4.1.9 - 4.2.4) Files (\*.model;\*.exp;\*.session)  
 CATIA V5 (V5R8 - V5-6R2016) Files (\*.CATPart;\*.CATProduct)  
 Solid Works (98 - 2017) Files (\*.sldprt;\*.sldasm)  
 Unigraphics (11 - NX11) Files (\*.prt)  
 Inventor Part (V6 - V2017) Files (\*.ipt)  
 Inventor Assembly (V11 - V2017) Files (\*.iam)  
 Solid Edge (V18 - ST9) Files (\*.par;\*.asm;\*.psm)



## Step3.關閉自動搜尋接觸面

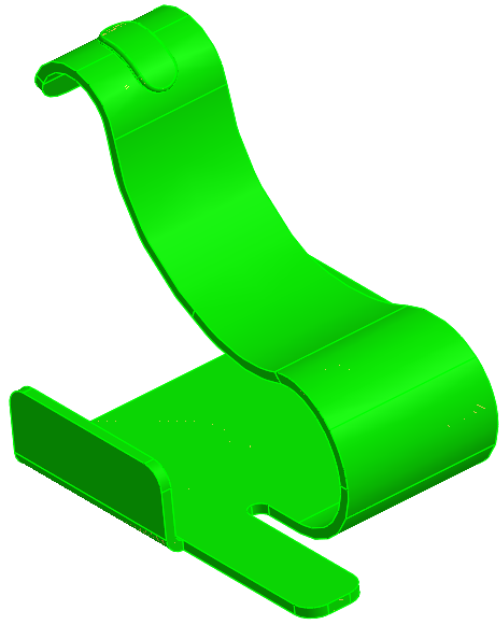
# 新增Copper C10100 彈塑性材料



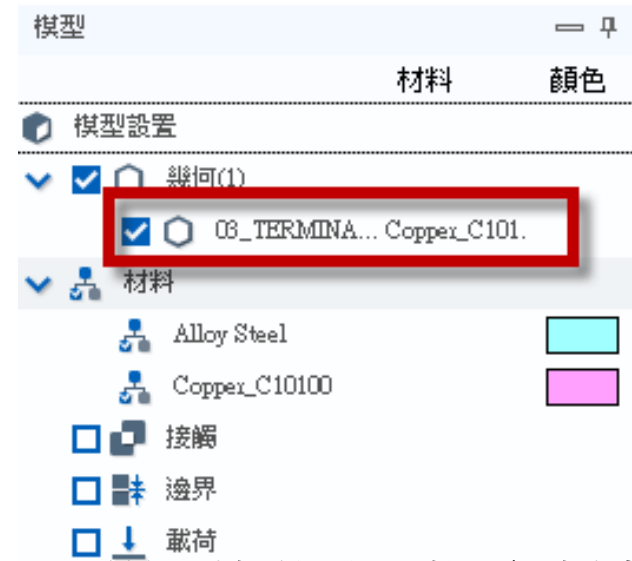
Copper and its alloys 類型  
> Copper\_C10100

勾選彈塑性, 採用應力-應變曲線

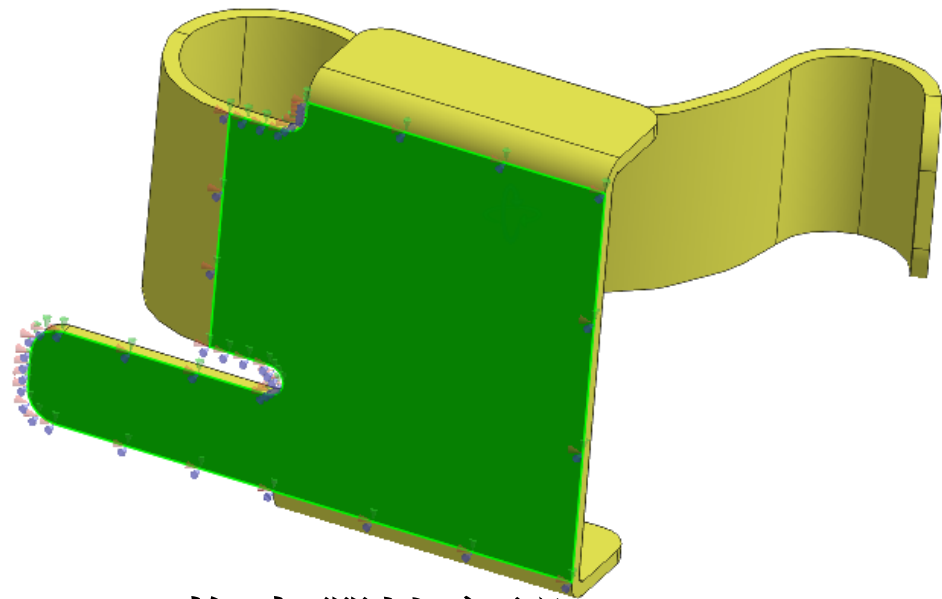
定義應力-應變曲線



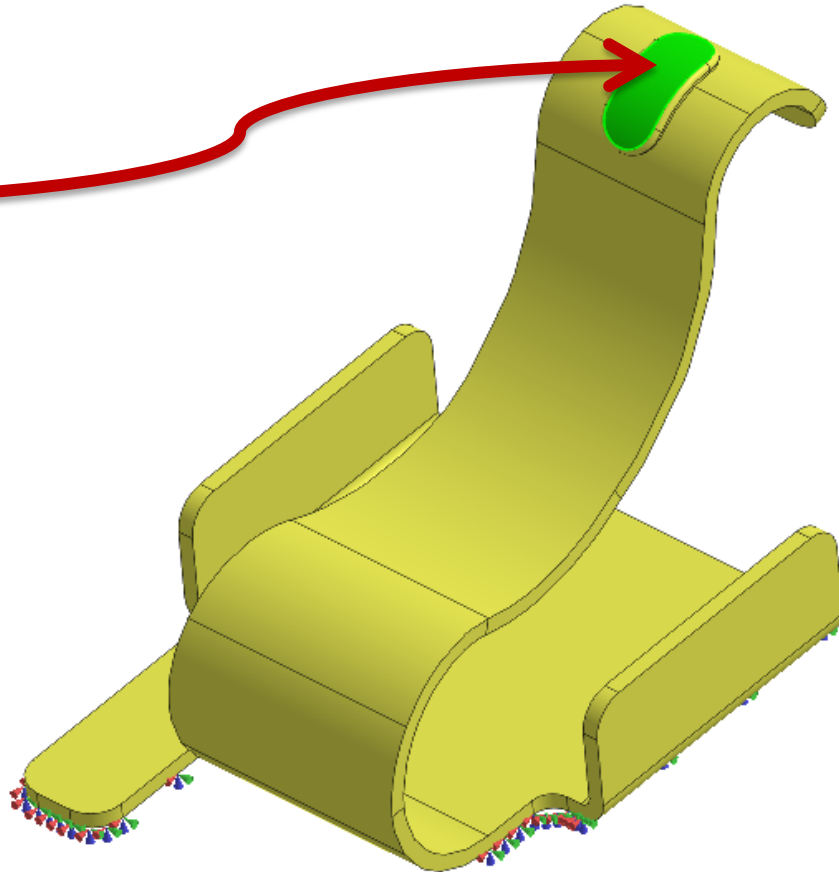
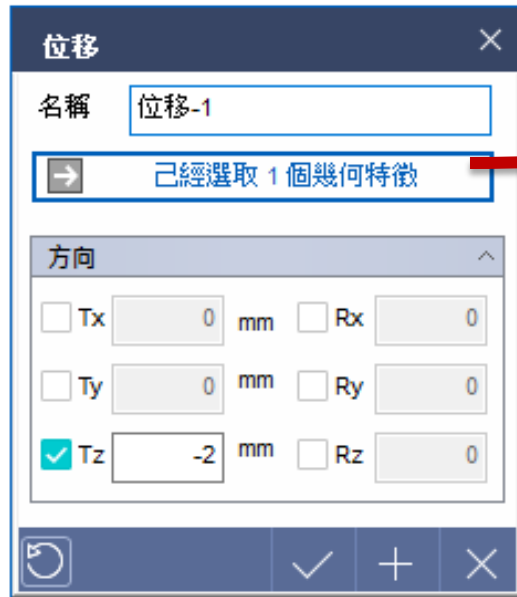
滑鼠右鍵,材料定義



模型樹顯示指定材料



拘束彈片底部  
(TX/TY/TZ)



施加2mm下壓  
(全局座標系判斷方向)

- 僅顯示此部件
- 隱藏
- 編輯格點數量
- 刪除
- 初始溫度
- 重力
- 材料 ▶

格點定義
✕

幾何 03\_TERMINAL\_POSITIVE.1 ▾

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**值** ▲

自動定義

最大     中間     最小

手動定義(數量)

X   
 Y   
 Z

手動定義(尺寸)

長度  mm

幾何特徵詳細表示  
(數值越低精度越高, 計算量越大。)

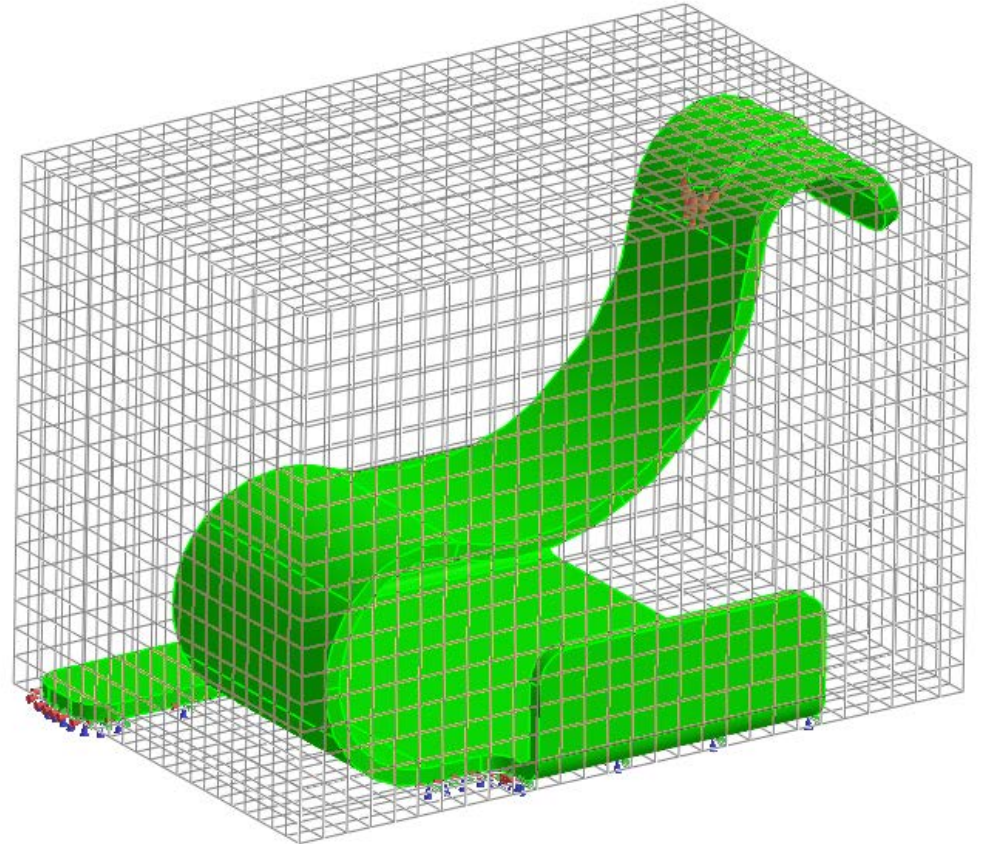
(0.1~1)

根據幾何形狀調整網格方向

提高計算精度

🔍
✓
+
✕

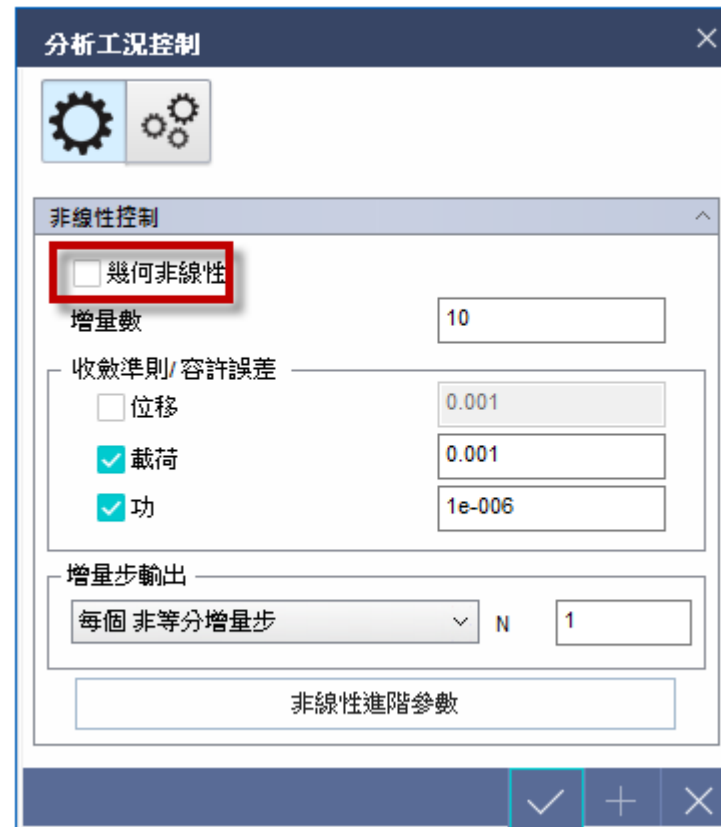
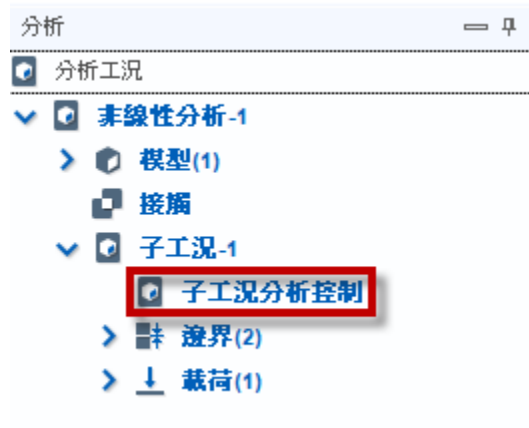
## 格點尺寸定義(0.25mm)





# 分析工況控制

單純計算彈塑性材料非線性可以不用勾選幾何非線性計算!!



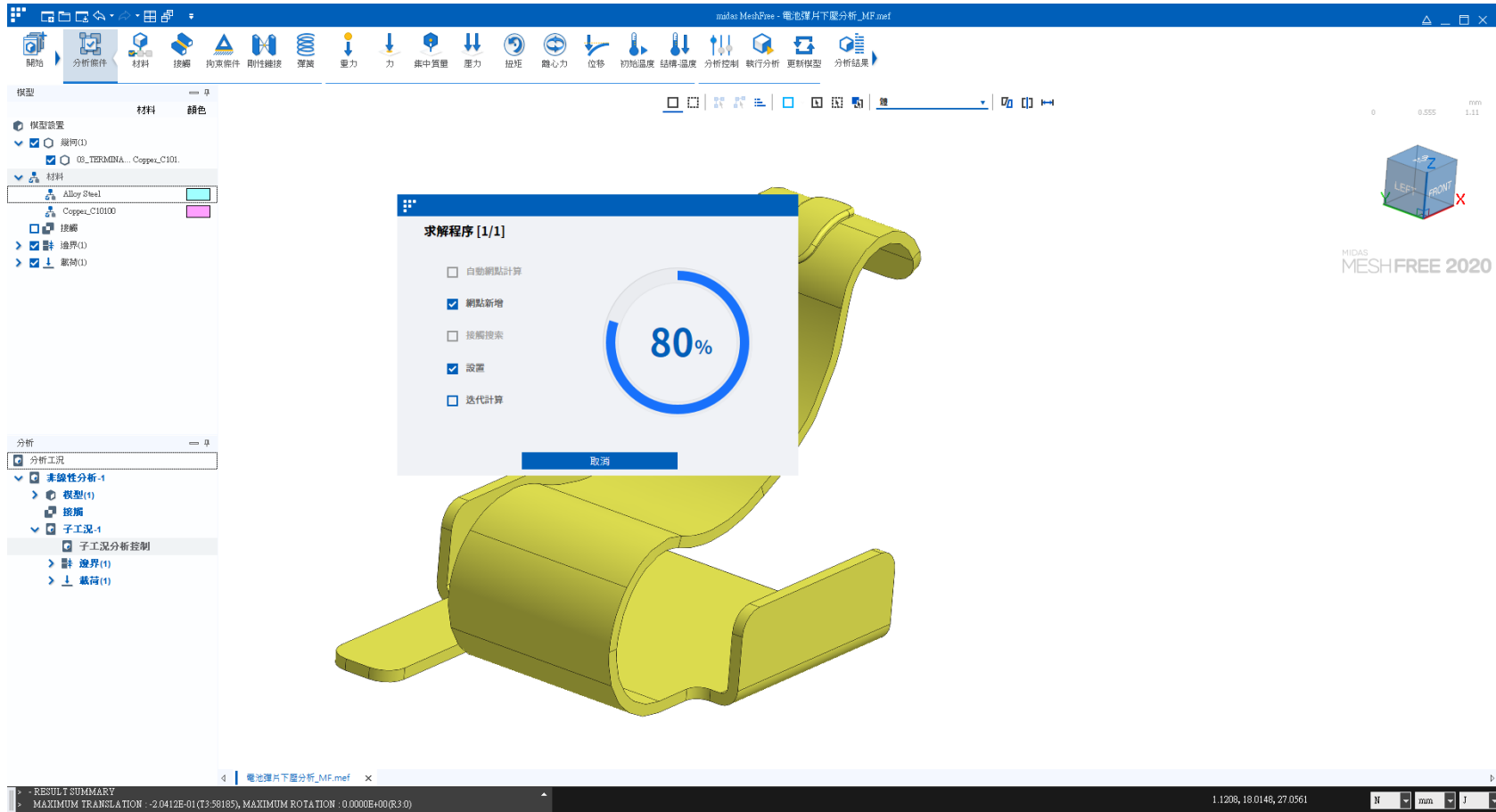
註:無網格法不容易收斂,可以增加增量數穩定收斂



取消分析前邊界條件檢查



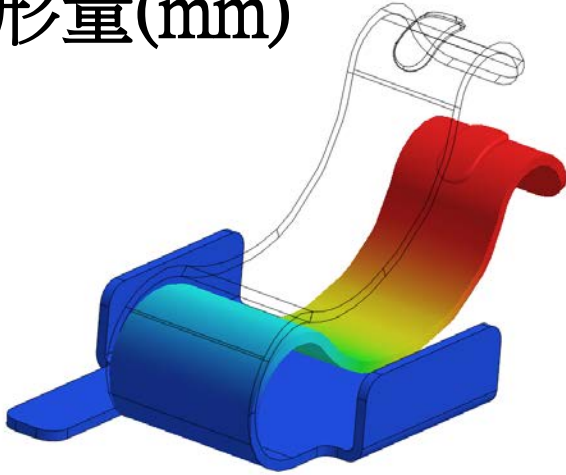
記憶體大小  
1.計算速度  
2.分析準確性



## 收斂計算過程

分析類型 非線性分析-1  
子工況 子工況-1  
Step [INCR=10 (LOAD=1.000)]

# 變形量(mm)



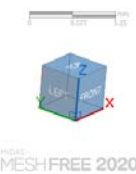
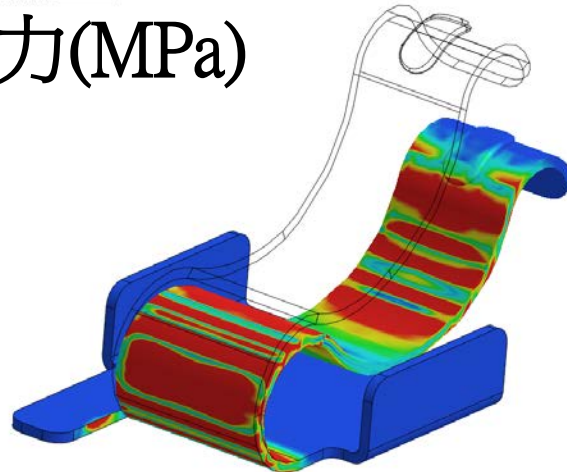
Deformations  
DISPLACEMENT (mm)

28.8%	+2.34644e+000
3.6%	+2.15090e+000
2.7%	+1.95536e+000
2.7%	+1.75983e+000
2.6%	+1.56429e+000
2.1%	+1.36875e+000
2.4%	+1.17322e+000
2.4%	+9.77660e-001
2.4%	+7.82146e-001
3.2%	+5.86609e-001
3.4%	+3.91073e-001
4.9%	+1.95536e-001
51.5%	+0.00000e+000

非線性分析-1  
子工況-1  
INCR=10 (LOAD=1.000)  
Unit: mm

分析類型 非線性分析-1  
子工況 子工況-1  
Step [INCR=10 (LOAD=1.000)]  
結果 STRESS VON MISES

# 應力(MPa)

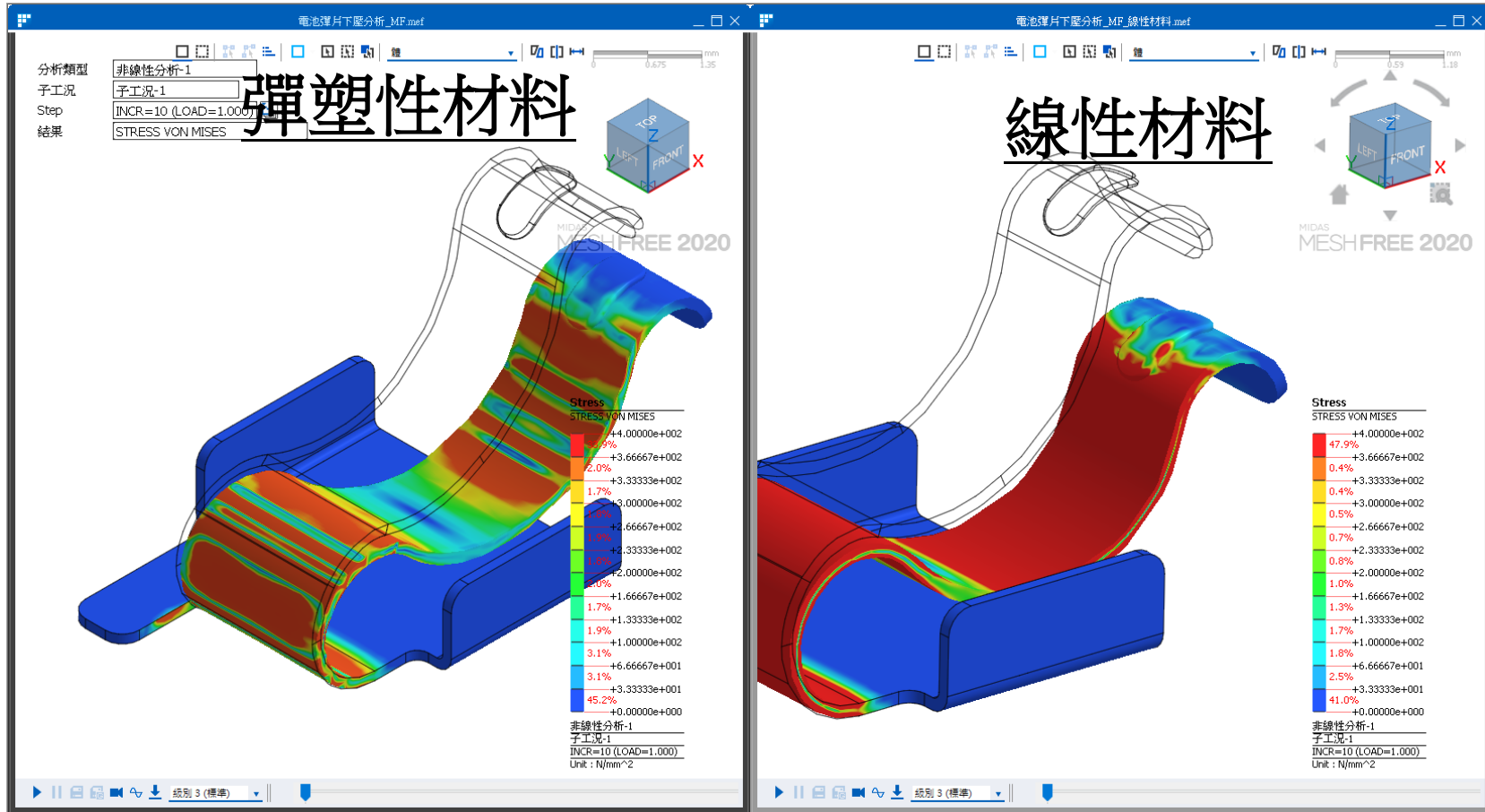


Stress  
STRESS VON MISES

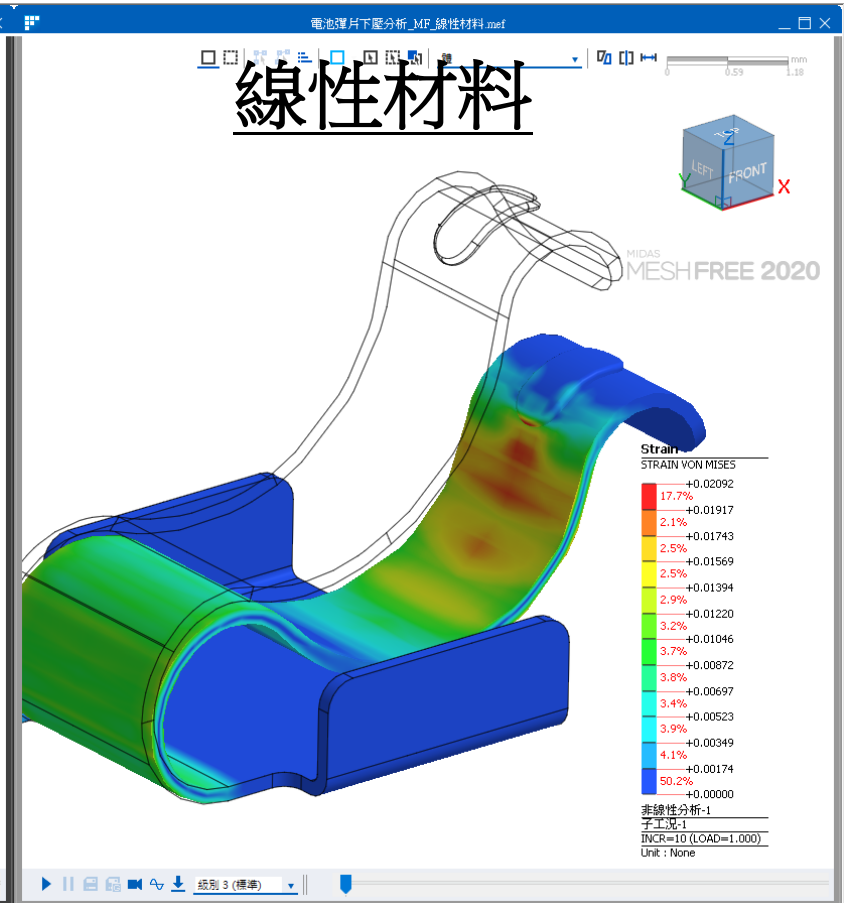
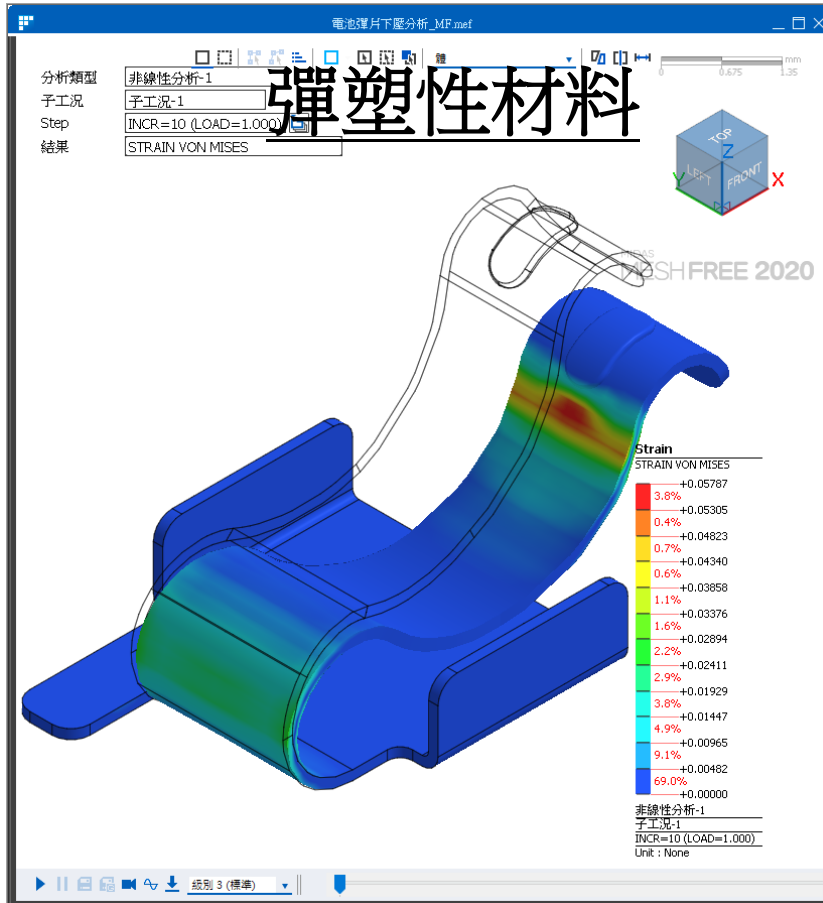
28.8%	+3.61675e+002
3.6%	+3.50529e+002
3.6%	+3.18229e+002
1.8%	+2.86406e+002
1.6%	+2.54603e+002
2.0%	+2.22760e+002
1.6%	+1.90938e+002
2.9%	+1.59115e+002
1.6%	+1.27292e+002
2.1%	+9.54689e+001
2.9%	+6.36459e+001
3.0%	+3.18229e+001
45.0%	+3.32882e+000

非線性分析-1  
子工況-1  
INCR=10 (LOAD=1.000)  
Unit: N/mm<sup>2</sup>

# 補充:線性材料和彈塑性材料-應力(MPa)



# 補充:線性材料和彈塑性材料-應變(%)



# 補充:線性材料和彈塑性材料-變形(mm)

