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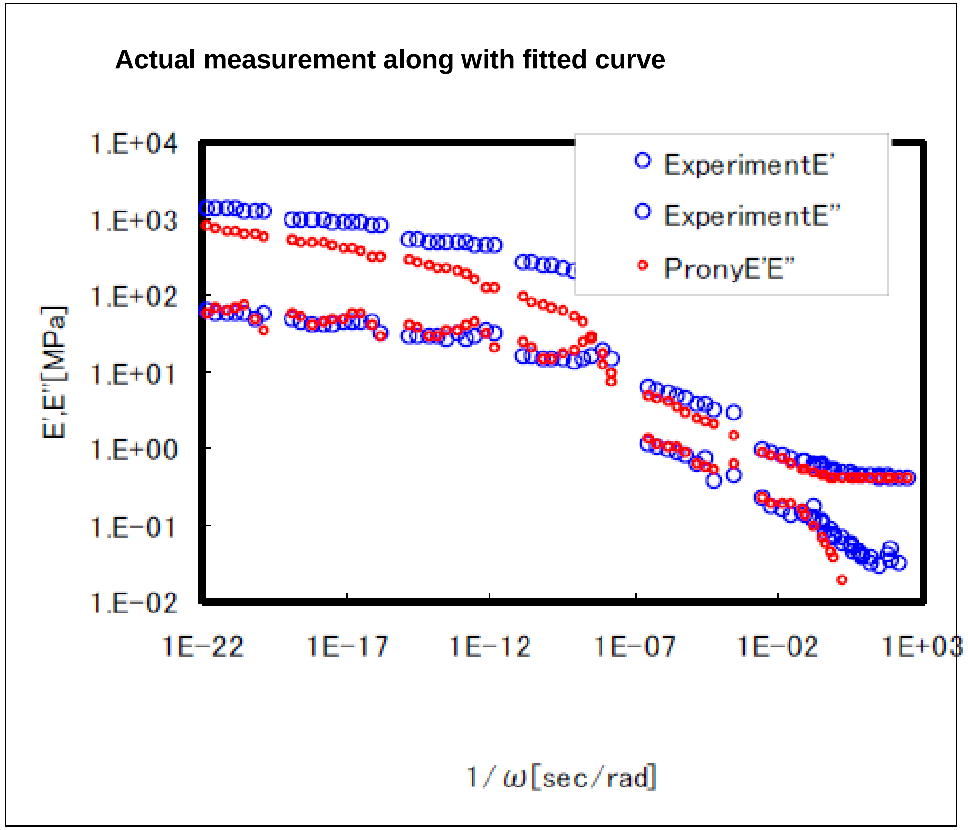
θ-6 Identification of material property

ANSYS 10.0

Young's Modulus[MPa]	Poisson's Ratio[-]
9.15301E+02	4.99000E-01
$\bar{g}_i^P$ [MPa]	τ_i^G [sec]
1.65253E-01	1.59155E-23
9.79074E-02	3.18310E-22
1.23535E-01	3.18310E-21
9.91749E-02	1.59155E-19
9.08010E-03	3.18310E-19
7.04485E-02	3.18310E-18
1.06602E-01	3.18310E-17
6.33034E-02	1.59155E-15
1.49494E-02	3.18310E-15
4.33401E-02	3.18310E-14
8.39892E-02	3.18310E-13
4.41652E-02	1.59155E-11
4.30582E-05	3.1831E-11
2.20765E-02	3.1831E-10
5.03864E-02	3.1831E-09
1.22065E-03	3.1831E-07
9.38401E-05	6.3662E-07
1.70947E-03	3.1831E-06
6.51961E-04	3.1831E-05
1.04405E-03	0.00031831
1.96381E-04	0.003183099
3.34686E-04	0.031830989
6.74887E-05	0.318309886
1.09315E-10	3.183098861
8.02066E-13	31.83098861

Prony series

$$G(\tau) = G_0\left\{1-\sum_{i=1}^{N}\bar{g}_i^P\left(1-e^{-\tau/\tau_i^G}\right)\right\},\quad K(\tau)=\infty$$



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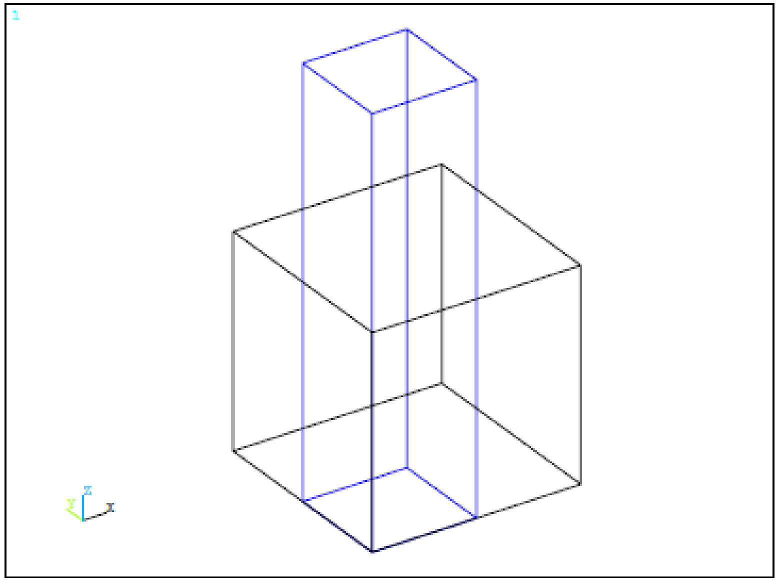
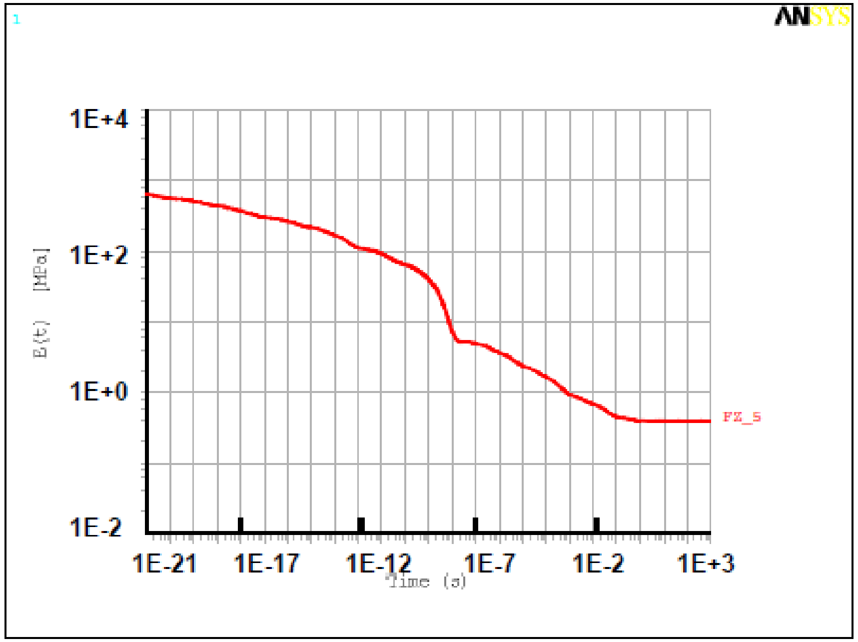
θ-6 Stress-relaxation analysis : theta6_relax_ansys.dat

ANSYS 10.0



Hexahedron (1mmx1mmx1mm)
Keeping 1mm enforced displacement

Analysis model



Stress-relaxation curve

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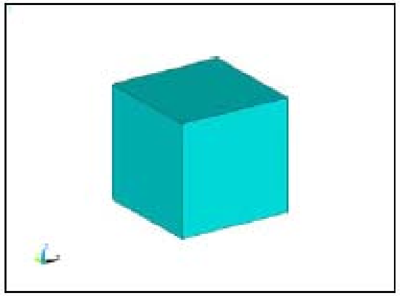
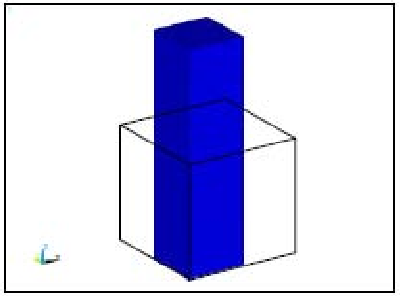
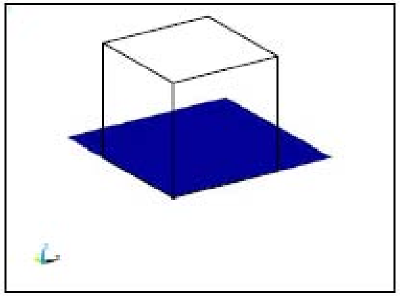
θ-6 Harmonic vibration analysis (theta6_freq_ansys.dat)

ANSYS 10.0

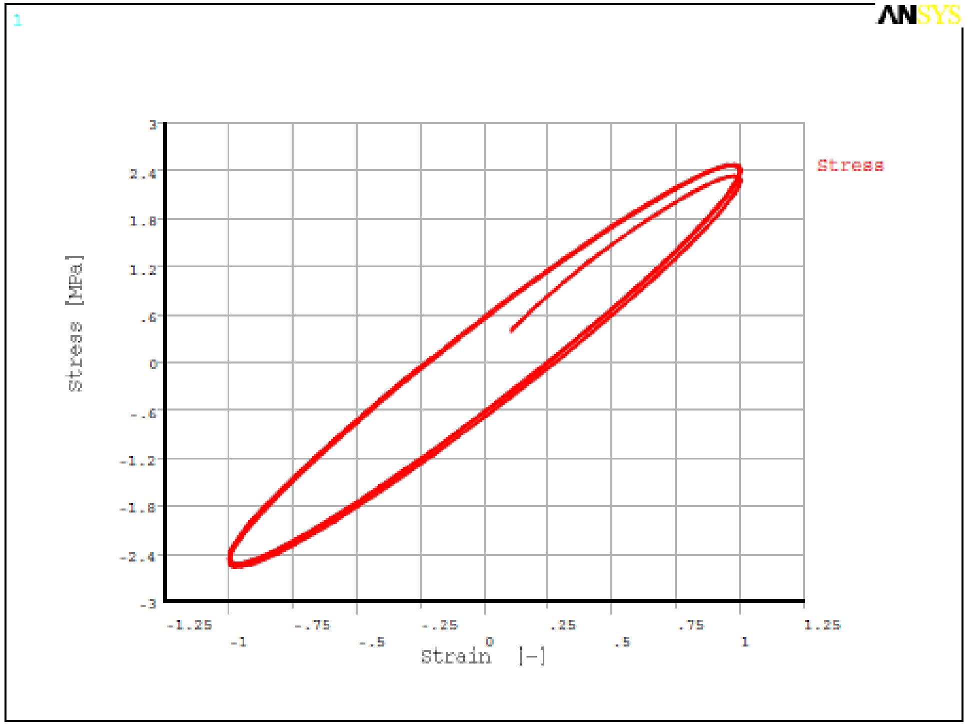






Analysis model

Amplitude A = 1mm
Frequency f=10^4Hz
Displacement δ= Asin2 πf



10^4Hz hysteresis curve