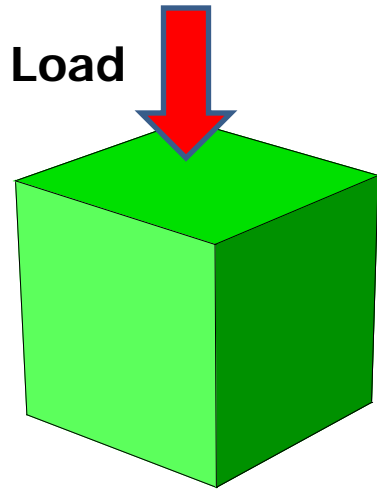


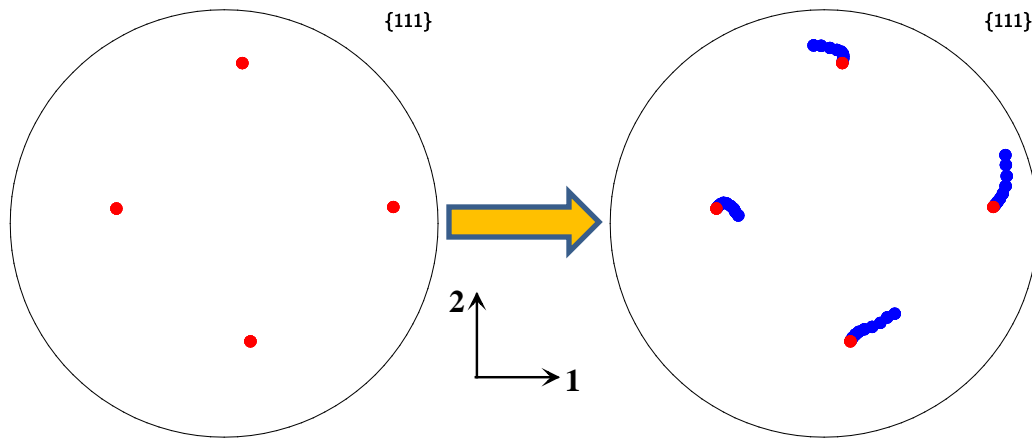
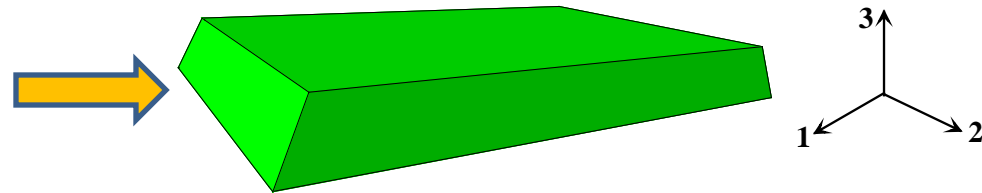
Crystal Plasticity FEM: The Mechanical Response and Texture Evolution of Aluminum Single Crystals / Polycrystals Using One- Element Simulations

Q. Ma, E.B. Marin, M.F. Horstemeyer

1. Single Crystal Simulation

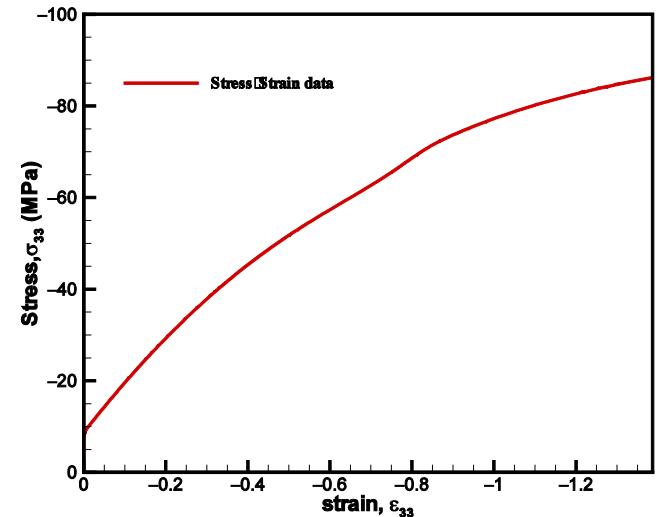


Uniaxial Compression, 75%.



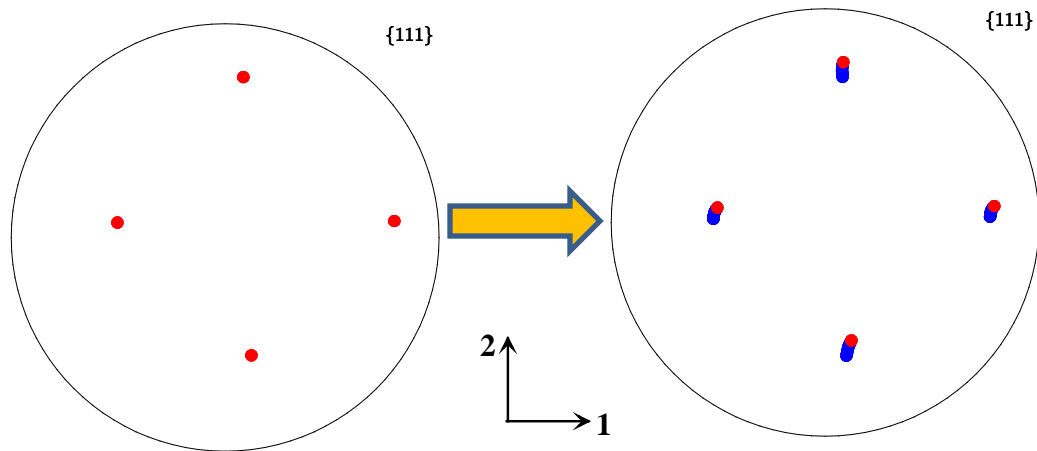
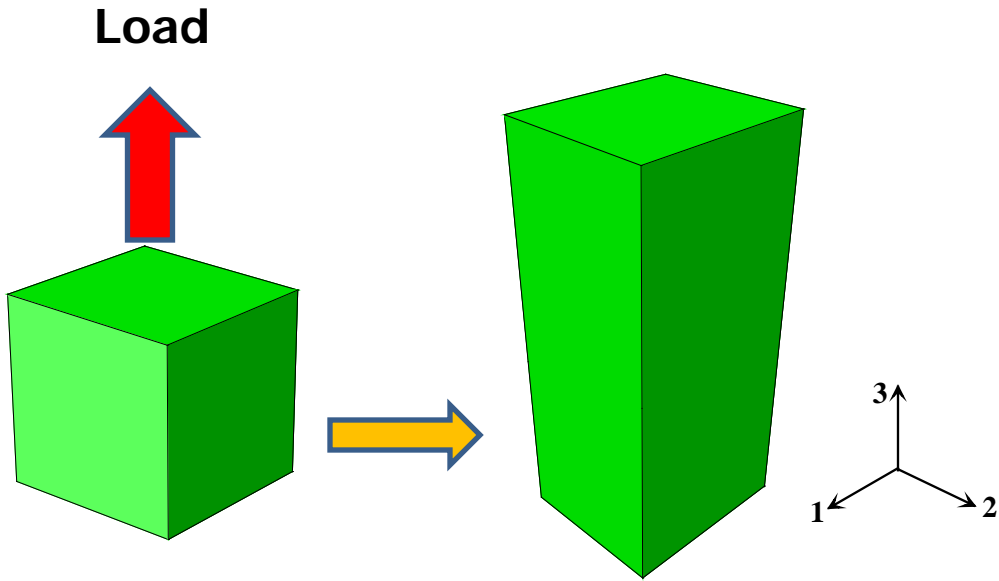
Initial orientation
{35°, 16°, 79°}

Orientation rotation

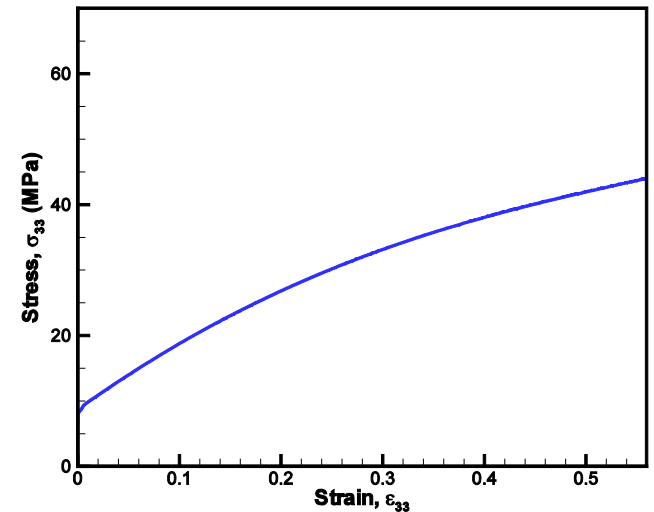


Stress-strain data

Uniaxial Tension, 75%.

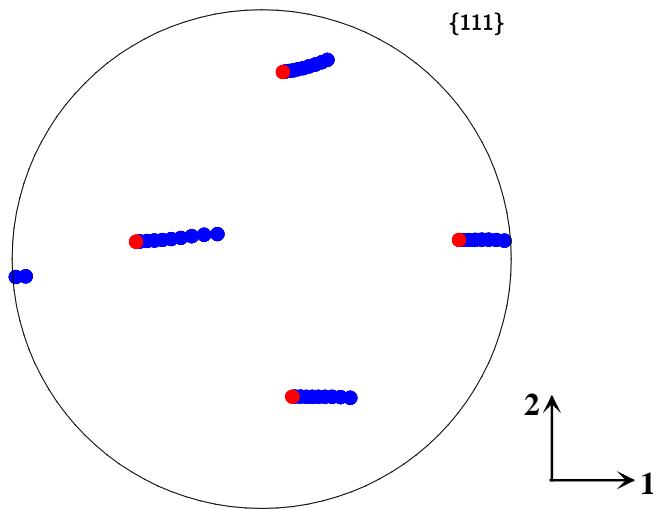
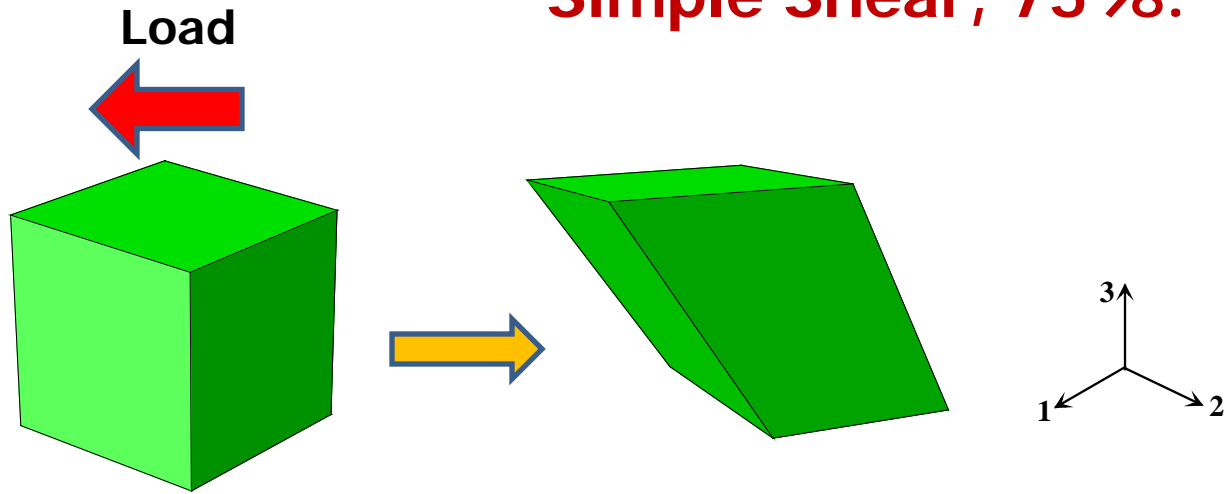


Orientation rotation

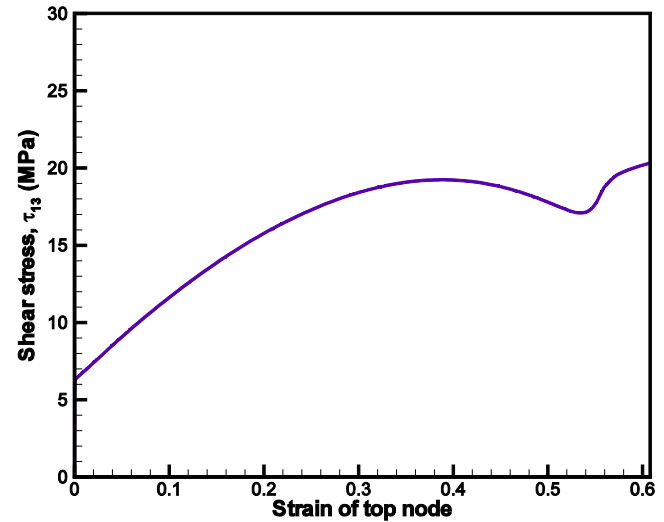


Stress-strain data

Simple Shear, 75%.

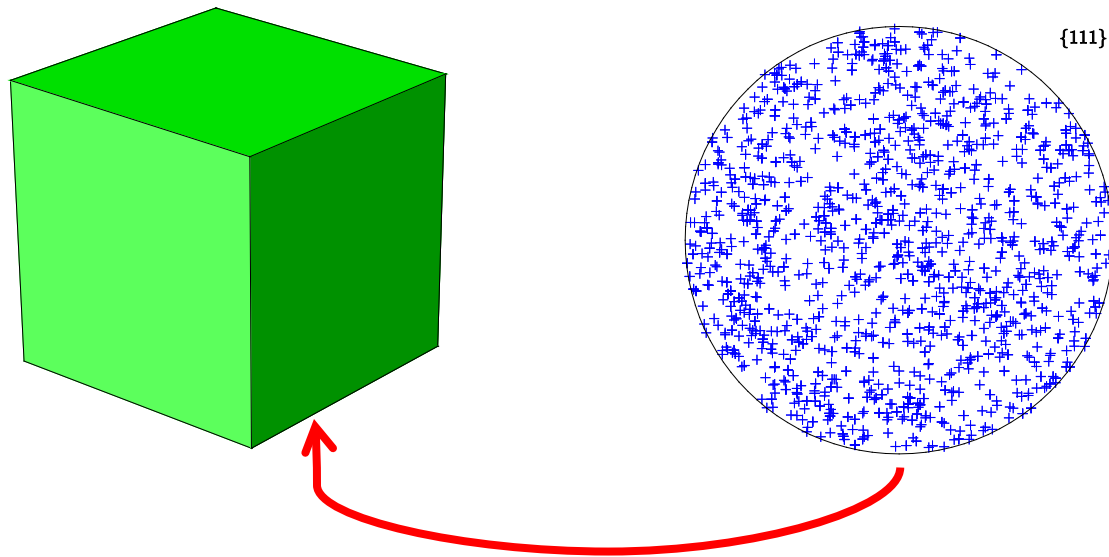


Orientation rotation



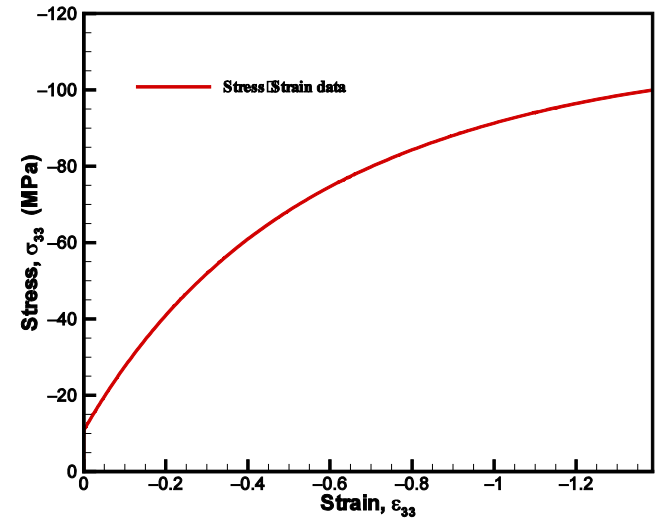
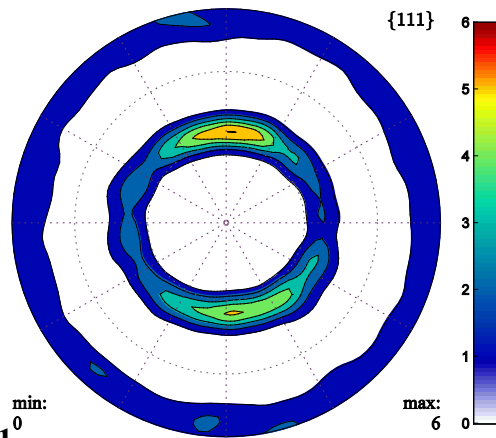
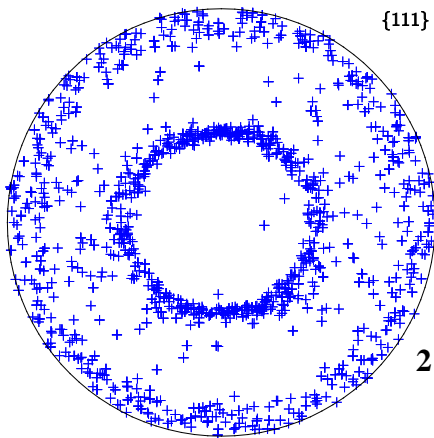
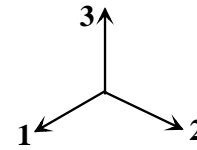
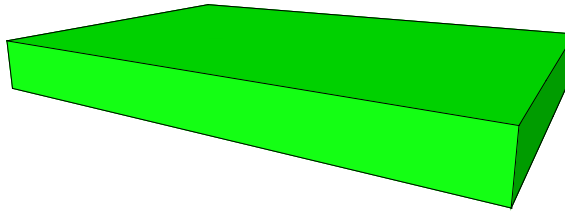
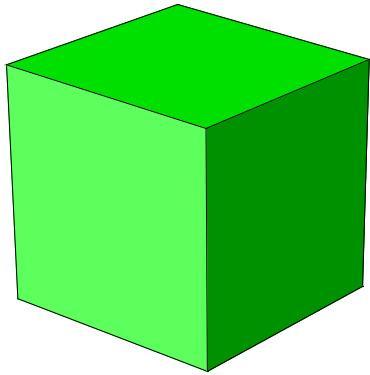
Stress-strain data

2. Polycrystal Simulation



Polycrystal represented by 500 random orientations

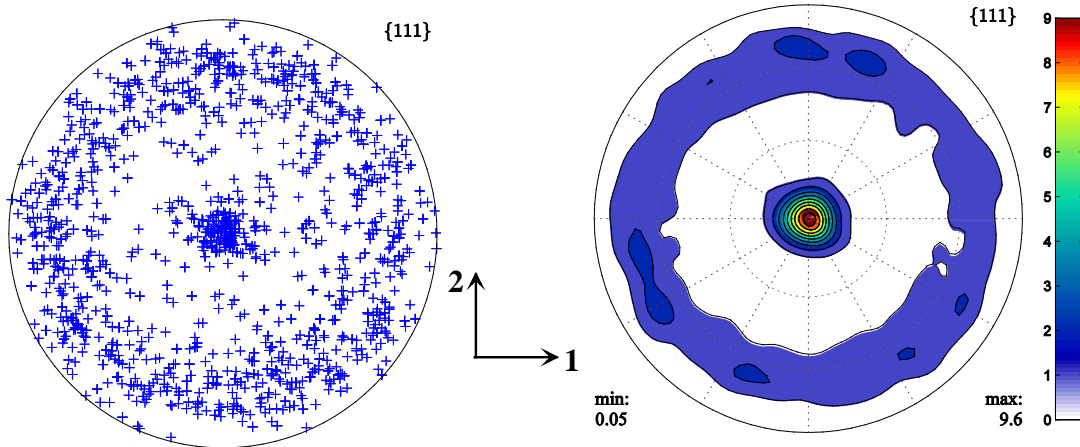
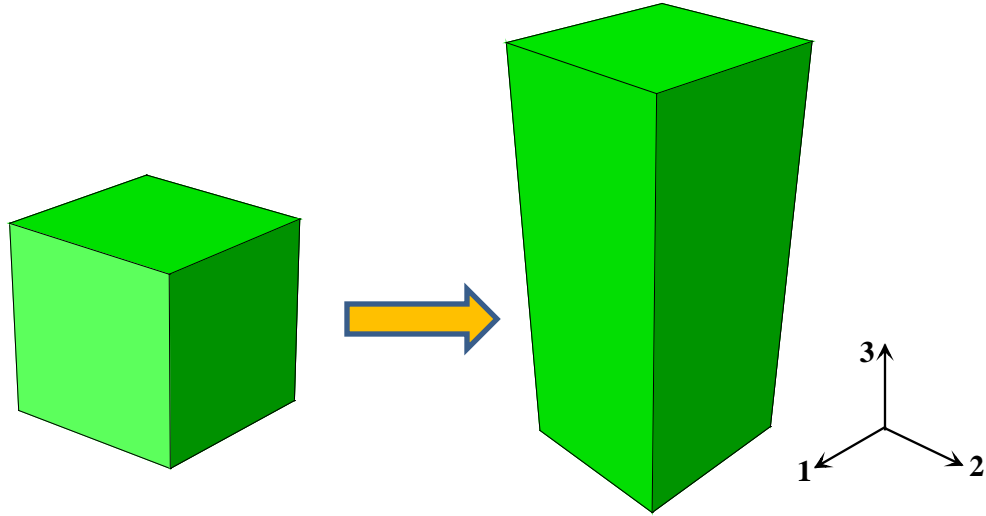
Uniaxial Compression, 75%.



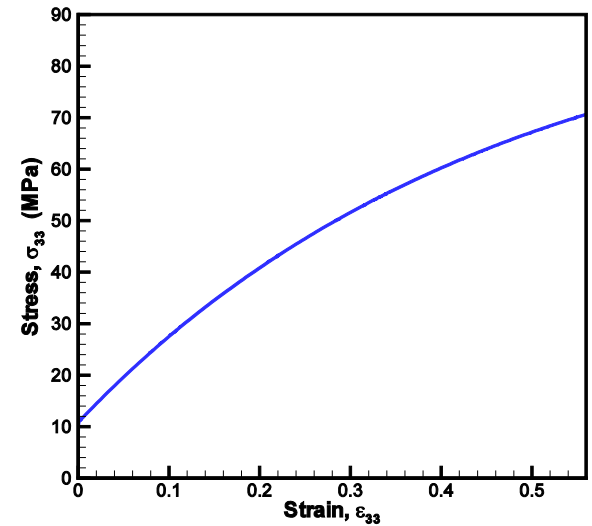
Deformation texture

Stress-strain data

Uniaxial Tension, 75%.

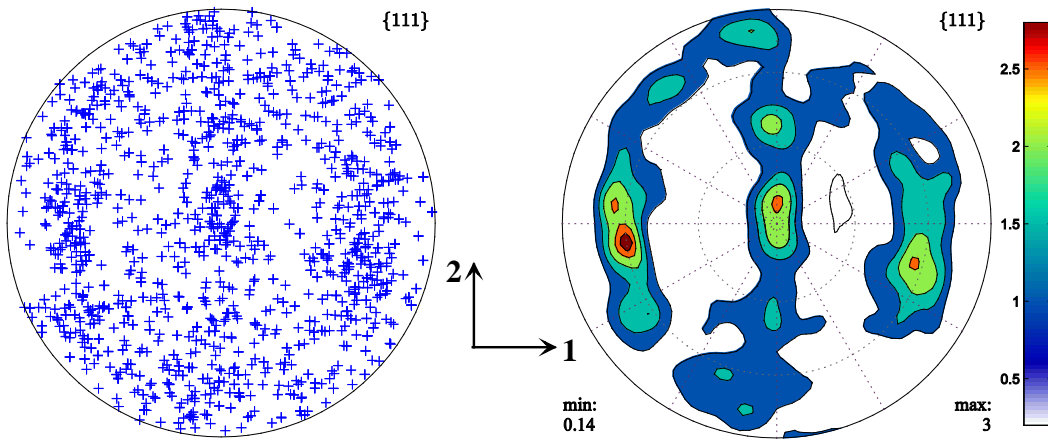
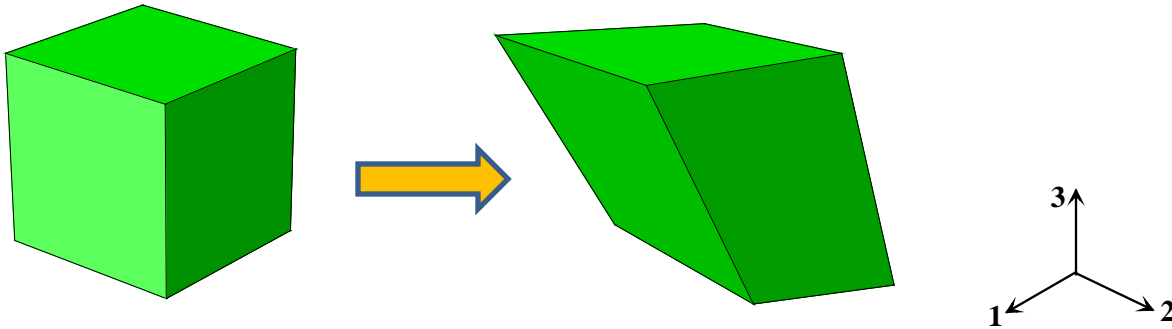


Deformation texture

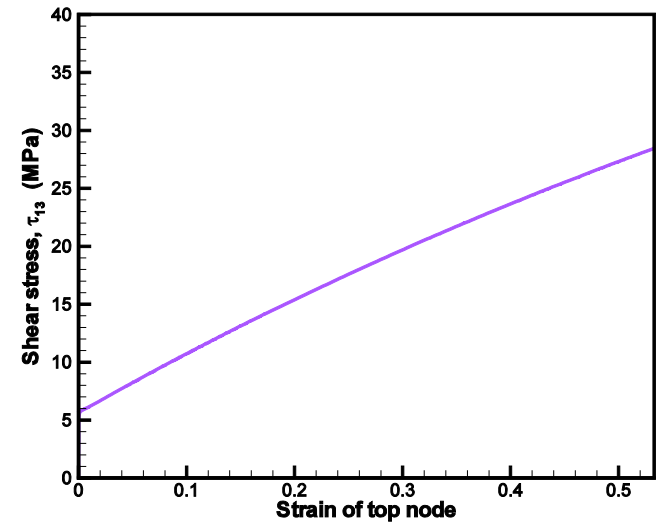


Stress-strain data

Simple Shear, 75%.



Deformation texture



Stress-strain data