**Supplementary Table S1** Elastic modulus under different axial stress ($σ\_{3}$=0 MPa)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Serial Number | Maximum Stress $σ\_{1}$/MPa | Axial Strain | $E\_{s}^{+}$/GPa | $E\_{t}^{+}$/GPa | $E\_{s}^{-}$/GPa | $E\_{t}^{-}$/GPa |
| 1 | 10.74 | 0.20 | 5.35 | 9.69 | 6.79 | 11.23 |
| 2 | 20.10 | 0.31 | 6.63 | 11.23 | 8.97 | 14.31 |
| 3 | 30.00 | 0.40 | 7.54 | 12.56 | 10.44 | 17.00 |
| 4 | 41.12 | 0.48 | 8.53 | 13.53 | 11.71 | 19.53 |
| 5 | 50.12 | 0.55 | 9.39 | 13.82 | 12.63 | 20.70 |
| 6 | 60.15 | 0.62 | 9.81 | 14.09 | 13.14 | 21.01 |

**Supplementary Table S2** Elastic modulus under different deviatoric stress ($σ\_{3}$=20 MPa)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Serial Number | Maximum Stress $σ\_{1}$-$σ\_{3}$/MPa | Axial Strain | $E\_{s}^{+}$/GPa | $E\_{t}^{+}$/GPa | $E\_{s}^{-}$/GPa | $E\_{t}^{-}$/GPa |
| 1 | 10.0 | 0.1 | 17.7 | 17.6 | 19.4 | 19.8 |
| 2 | 19.9 | 0.1 | 17.7 | 17.9 | 20.2 | 21.3 |
| 3 | 40.0 | 0.2 | 17.8 | 19.0 | 21.0 | 24.2 |
| 4 | 58.8 | 0.3 | 18.1 | 20.6 | 21.3 | 25.8 |
| 5 | 87.5 | 0.5 | 18.4 | 22.0 | 21.6 | 26.8 |
| 6 | 119.4 | 0.7 | 18.3 | 22.3 | 21.2 | 27.3 |
| 7 | 150.2 | 0.9 | 17.4 | 22.2 | 20.2 | 27.3 |