**Table S8** **Experimental values of thermal conductivity of FCC Pt as a function of temperature and pressure.**

| Thermal conductivity of FCC-Pt under different pressure (GPa) and temperature conditions (W/m·K) | | | | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 𝑇 (K) | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 150 | 200 |
| 300 | 60.83 | 71.40 | 81.78 | 92.06 | 101.90 | 112.31 | 122.21 | 132.01 | 141.71 | 151.33 | 160.91 | 208.20 | 254.32 |
| 600 | 66.92 | 78.33 | 89.12 | 99.80 | 109.83 | 119.51 | 129.14 | 138.67 | 148.10 | 157.45 | 166.70 | 212.41 | 257.89 |
| 900 | 73.47 | 86.15 | 98.50 | 110.57 | 120.65 | 130.46 | 140.12 | 149.63 | 158.99 | 168.21 | 177.34 | 222.18 | 267.09 |
| 1200 | 80.05 | 93.89 | 107.75 | 121.47 | 133.23 | 144.31 | 154.69 | 164.52 | 174.00 | 183.23 | 192.37 | 236.74 | 281.53 |
| 1500 | 84.25 | 99.74 | 114.56 | 129.14 | 143.11 | 156.77 | 169.46 | 180.94 | 191.47 | 201.31 | 211.64 | 254.90 | 300.16 |
| 1800 | 85.94 | 103.02 | 118.84 | 134.20 | 149.33 | 164.74 | 179.89 | 193.81 | 206.90 | 218.58 | 229.27 | 275.91 | 321.91 |
| 2100 | 85.94 | 104.11 | 120.92 | 137.01 | 152.75 | 168.95 | 185.51 | 201.23 | 217.06 | 231.21 | 244.16 | 296.68 | 344.62 |
| 2400 | 85.19 | 104.00 | 121.61 | 138.21 | 154.34 | 170.83 | 187.94 | 205.19 | 222.26 | 238.48 | 253.67 | 314.04 | 366.09 |
| 2700 | - | 103.25 | 121.27 | 138.27 | 154.63 | 171.20 | 188.39 | 206.19 | 224.00 | 241.47 | 258.35 | 327.87 | 384.64 |
| 3000 | - | - | 120.46 | 137.66 | 154.11 | 170.63 | 187.71 | 205.51 | 222.10 | 241.67 | 259.52 | 337.05 | 399.39 |
| 3300 | - | - | - | 136.72 | 153.19 | 169.51 | 186.38 | 203.97 | 221.39 | 240.18 | 258.53 | 342.09 | 410.10 |
| 3600 | - | - | - | - | 151.70 | 168.20 | 184.75 | 202.00 | 219.79 | 238.12 | 256.28 | 343.85 | 417.10 |
| 3900 | - | - | - | - | 150.80 | 166.77 | 182.90 | 199.88 | 217.46 | 233.08 | 253.40 | 343.23 | 420.96 |
| 4200 | - | - | - | - | - | 165.38 | 181.27 | 197.76 | 214.98 | 231.25 | 250.15 | 341.06 | 422.27 |
| 4500 | - | - | - | - | - | - | 179.64 | 195.67 | 212.54 | 229.53 | 247.54 | 337.89 | 421.34 |
| 4800 | - | - | - | - | - | - | - | 191.49 | 206.62 | 227.08 | 240.61 | 334.22 | 419.25 |