APPENDIX A

**Table I.** Thermal and optical properties of Ti-6Al-4V used in the laser heating model.

|  |  |
| --- | --- |
| Absorption depth, *α* | 100 nm |
| Reflectivity at λ=1064 nm, *R* | 0.6154 |
| Melting temperature, *Tm* | 1943 K |
| Vaporization temperature, *T­v* | 3560 K |
| Density, *ρ* | 4.42 g/cm3 |
| Atomic weight  | 47.897 g/mol |
| Latent heat of melting, *L* | 390 kJ/mol |
| Latent heat of vaporization, *Lv* | 421 kJ/mol |
| Thermal conductivity at room temperature, *KS* | 7 W/m K |
| Thermal conductivity (*T<Tm*), *K1* | $-0.797+18.2E˗3T-20E˗6T^{2} $W/m K |
| Thermal conductivity (*T>Tm*), *K2* | 34.6 W/m K |
| Heat capacity (*T<Tm*), $C\_{p\_{1}}$ | $0.4115+2E˗4T+5E˗10T^{2} $ J/g K |
| Heat capacity (*T>Tm*), $C\_{p\_{2}}$ | 0.83 J/g K |