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Calculation of optical absorption in Al accross the solid $\longrightarrow$ liquid transition LORIN X. BENEDICT, JOHN E. KLEPEIS, FREDERICK H. STREITZ, Lawrence Livermore National Lab — We calculate the optical absorption spectrum of solid and liquid Al for temperatures between 0 K and 1800 K with an empirical pseudopotential technique. It is found that a prominent peak in the spectrum of the solid (at $\hbar\omega \sim 1.5$ eV) disappears as the temperature is raised above $T_{melt} = 938$ K. This is in agreement with earlier measurements on solid and liquid Al, but is in disagreement with more recent measurements on the liquid, in which the peak was seen to remain at T= 1550 K. Our results suggest that *in situ* optical constants measurements may be used as a diagnostic for the shock melting of Al.

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