Entropy of supercooled liquid

The heat capacity at constant pressure of a substance is $C_{\text{sol}}$ in its solid state and $C_{\text{liq}}$ in its liquid state. Both quantities can be treated as constants. When the substance melts (at $T = T_M$) it absorbs the latent heat $L$. Find the entropy difference $\Delta S = S_{\text{liq}} - S_{\text{sol}}$ between the supercooled liquid state and the solid state at some temperature $T < T_M$.

Solution: