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Calculation of the $T-P$ phase diagrams for the halogenomethane compounds ($CCl_{4-n}Br_n$, $n = 0, 1, 2, 4$) using the mean field theory *

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The $T-P$ phase diagrams of the halogenomethane compounds ($CCl_{4-n}Br_n$, $n = 0, 1, 2, 4$) are calculated using a mean field model. By expanding the free energy in terms of the order parameters for the transitions of the liquid (L), rhombohedral (R), face-centered cubic (FCC) and monoclinic (M) phases in those compounds, the phase line equations are derived and they are fitted to the experimental data from the literature.

This method of calculating the $T-P$ phase diagram is satisfactory to explain the $T-P$ measurements for the halogenomethane compounds and it can also be applied to two-component systems.

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