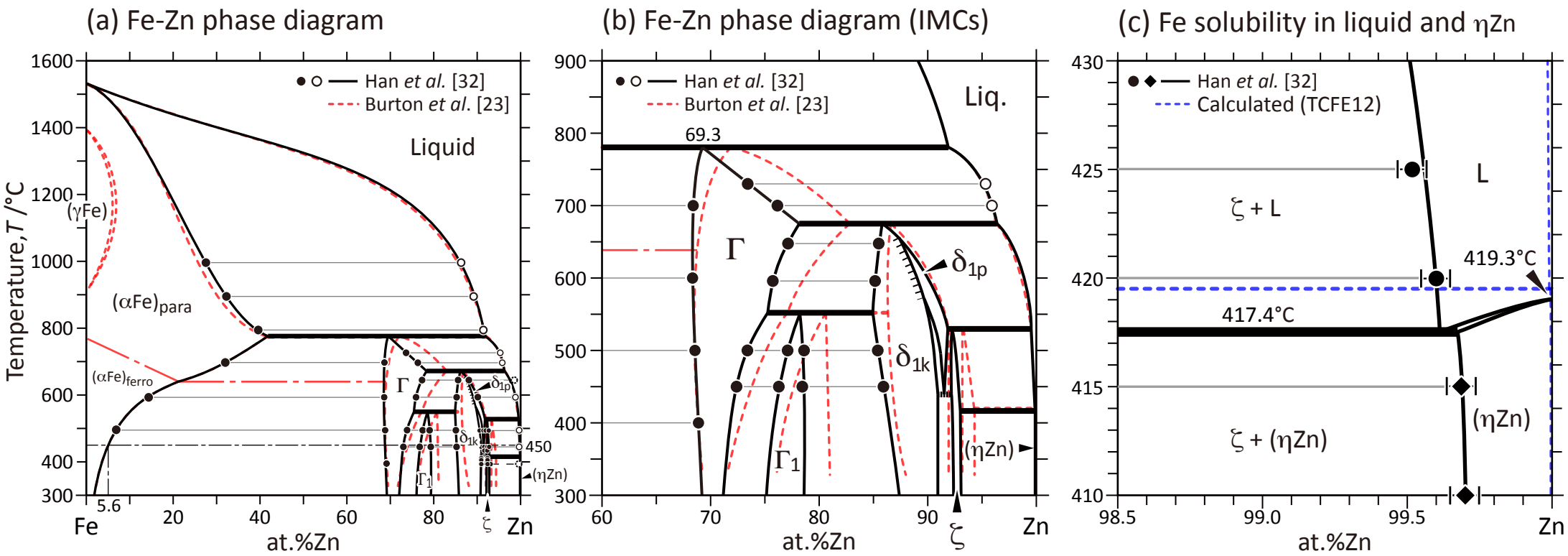

Figure 1 Phase diagrams of the Fe-Zn binary system experimentally determined by Han *et al*. [32]

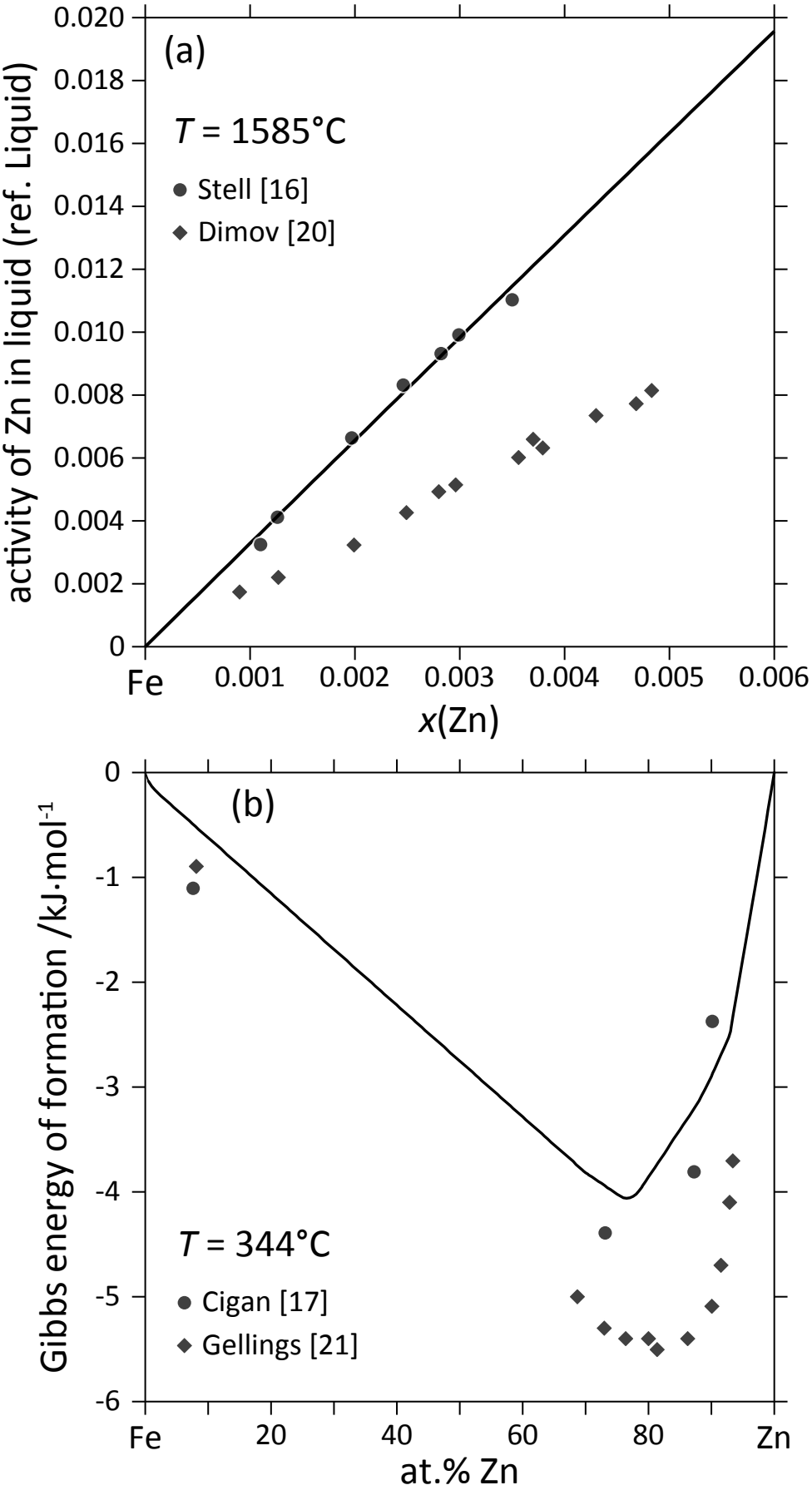

Figure 3 (a) Comparison of the activity of Zn in Fe-rich liquid alloys calculated at 1585°C with experimental data [16,20]. (b) Comparison of the formation Gibbs energy of Fe-Zn alloys calculated at 344°C with experimental data [17,21].

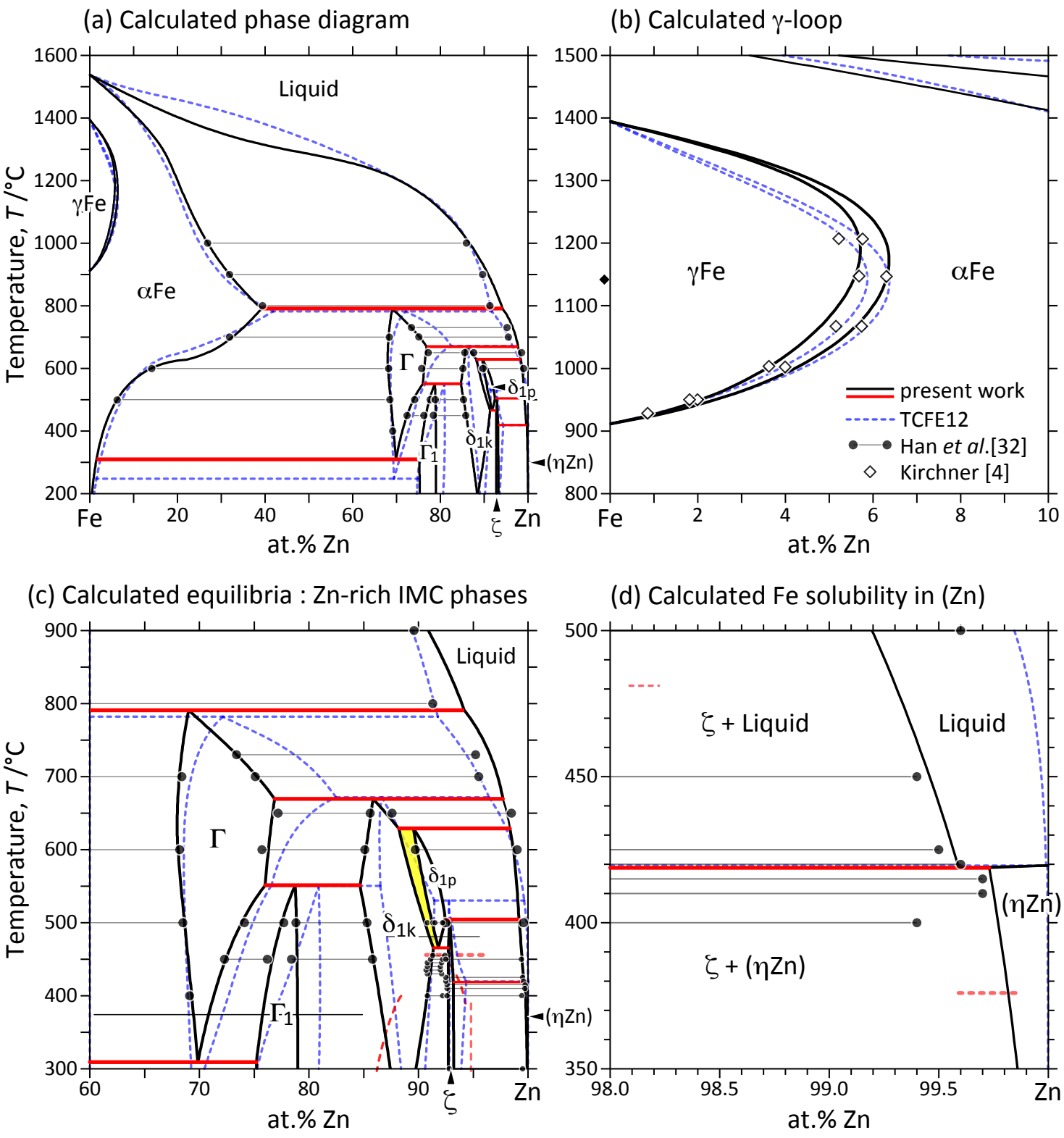

Figure 4 Comparison of the phase diagrams of the Fe-Zn binary system calculated in this study with the phase diagrams calculated using the TCFE12 thermodynamic database and experimental data [4,32]. Calculated miscibility gap between δ_{1k} and δ_{1p} phases is colored yellow in (c). The legend shown in (b) is common to (a) through (d).

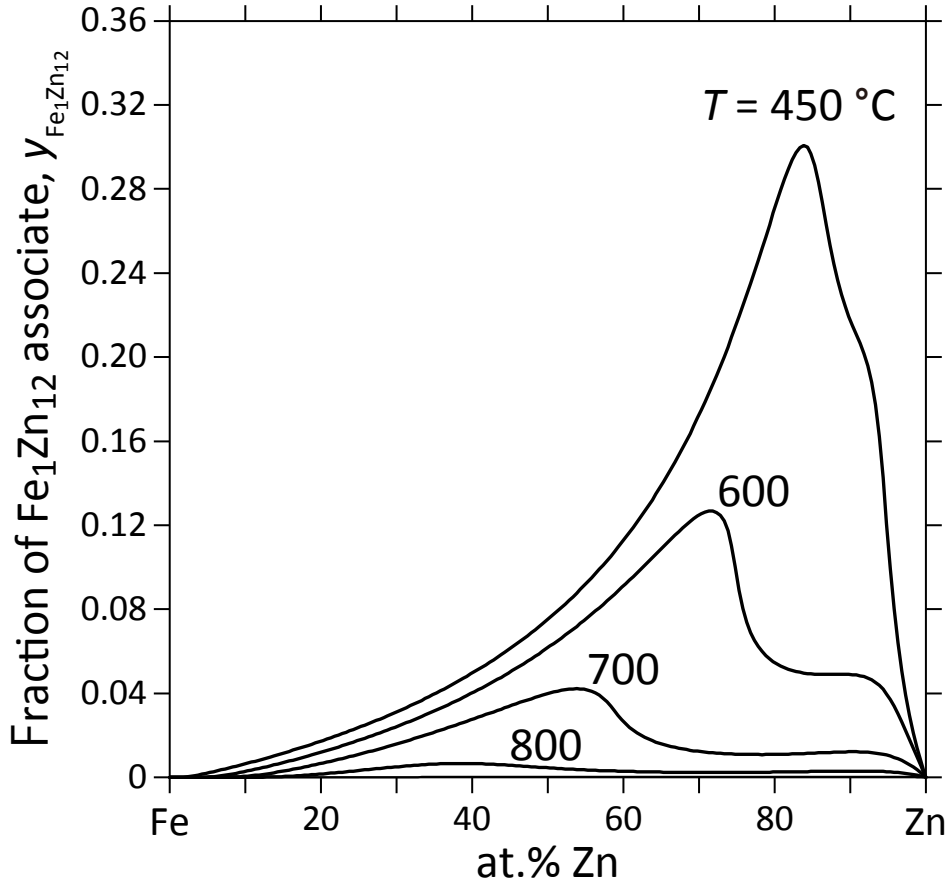

Figure 5 Site fraction of Fe_1Zn_{12} associates in liquid Fe-Zn alloys calculated at temperatures from 450 °C to 800 °C.

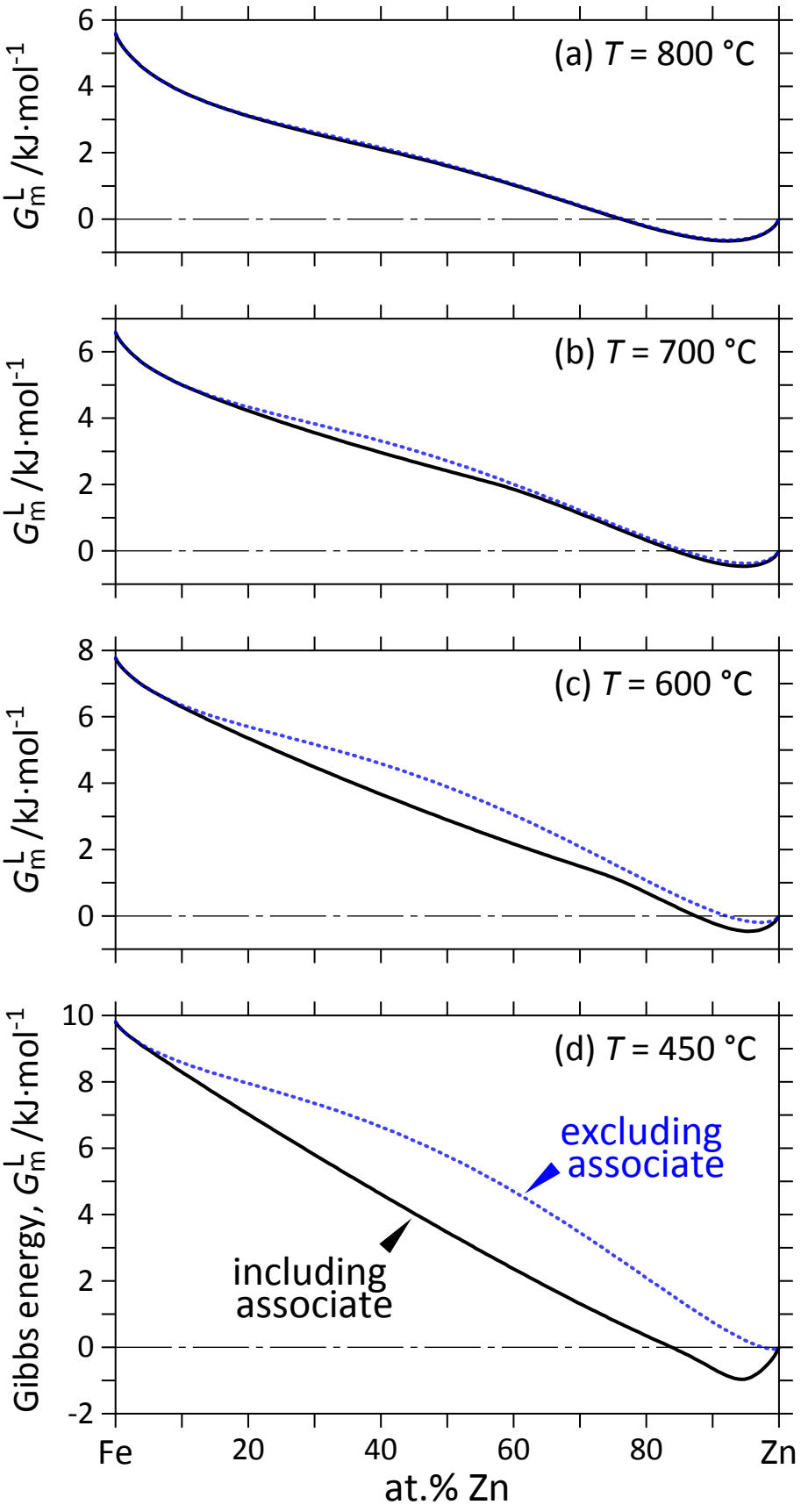

Figure 6 Gibbs energies of liquid Fe-Zn alloys calculated using the associate solution model at temperatures from 450 °C to 800 °C compared with those calculated excluding Fe_1Zn_{12} associates. Reference states of Fe and Zn are bcc (*A*2) and liquid, respectively.

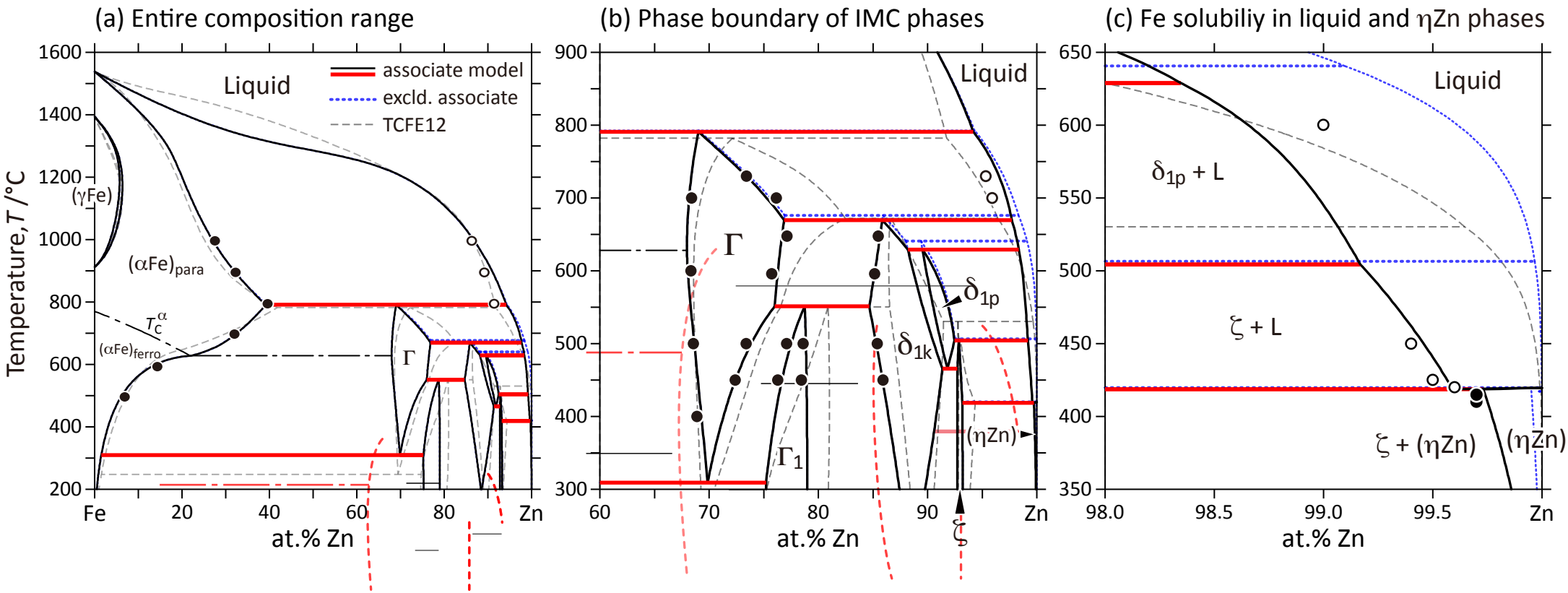

Figure 7 Comparison of the phase diagrams of the Fe-Zn binary system calculated in this study with the phase diagrams calculated excluding Fe_1Zn_{12} associates (denoted by "excld. associate" in (a)) from the Gibbs energy parameters, *i.e.*, ${}^{L}G_{Fe1Zn12} = 0$ and ${}^{A3}G_{Fe1Zn12} = 0$, in Table 3, with the phase diagrams calculated using TCFE12 thermodynamic database, and with experimental data (solid and open circles)[32]. The legend shown in (a) is common to (a) through (c).