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**Phase behavior in binary fluid mixtures with spherical and non-spherical interactions** ENRIQUE DIAZ-HERRERA, Universidad Autonoma Metropolitana (Mexico), GUILLERMO RAMIREZ-SANTIAGO, Instituto de Fisica, UNAM (Mexico), J. ANTONIO MORENO-RAZO, Universidad Autonoma Metropolitana (Mexico) — We have carried out extensive MD simulations to study the  $T$  vs.  $\rho$  phase diagram and the mix-demix transition in fluid binary mixtures with (1) Lennard-Jones, (2) Stock-Mayer and (3) Gay-Berne molecular interactions. This analysis is performed in terms of the miscibility parameter,  $\alpha = \epsilon_{AB}/\epsilon_{AA}$ , with  $\epsilon_{AA} = \epsilon_{BB}$ . When the miscibility of the mixture is in the range  $0 < \alpha < 1$ , a continuous critical line of consolute points appears. This line intersects the LV coexistence curve at different positions depending on the value of  $\alpha$ , yielding mainly three different topologies for the phase diagrams. We also carried out a detailed study of the interfacial properties as function of  $T$  and  $\alpha$ .

Enrique Diaz-Herrera  
Universidad Autonoma Metropolitana

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