Multicritical NAC Point [pln81]

The transition between nematic and smectic A (or C) can be continuous or discontinuous. The order parameter describes amplitude and direction of a density wave perpendicular to the emerging layers

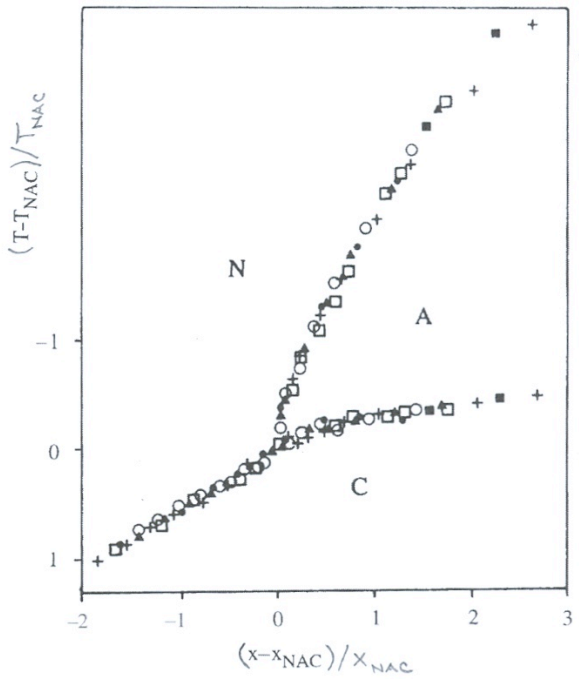
The transition between smectic A and smectic C is continuous. The order parameter describes the tilt angle between mesogens and the normal to the layers.

There exist mesogens that undergo continuous transitions between nematic and either smectic A or smectic C and between smectic A and smectic C.

In a diagram of concentration x versus temperature T, the transitions of each type are located on a line segment. The three line segments of critical points are joined in the multicritical NAC point.

The coordinates of the NAC point define natural units for x and T. These units facilitate graphical representations of features of universality as are common in critical phenomena.

The graph below shows critical-point data near the NAC point for five different mixtures of mesogens.



[image from Hamley 2007]