

Some dye molecules in solution naturally assemble, and if the assemblies are anisotropic and concentrated, they order into a liquid crystal phase. In one such dye, IR-806, there are two steps to the assembly process. The first occurs at very low concentrations without a threshold. At room temperature, the second occurs at a threshold concentration of 0.3 wt% and results in large assemblies that at slightly higher concentration form a liquid crystal phase.

The fact that the second step possesses a threshold was revealed through kinetic experiments. If solutions are diluted, changes in absorption occur only if the concentration starts out above 0.3 wt%. In initial solutions below the threshold, assembly is promoted by the addition of an NaCl solution. Again, the absorption changes only for additions of salt solutions above 0.05 M.

