The basic idea of fast Monte Carlo (FMC) simulations\(^1\) is to use soft potentials that allow particle overlapping, instead of hard-core repulsions (e.g., the Lennard-Jones potential in continuum or the self- and mutual-avoiding walk on a lattice) used in conventional molecular simulations. This gives orders of magnitude faster/better sampling of configuration space. Furthermore, since soft potentials are commonly used in polymer field theories, using the same Hamiltonian in both FMC simulations and the theories enables stringent test of the latter, without any parameter-fitting, to unambiguously and quantitatively reveal the consequences of theoretical approximations. In this talk I will use several systems, ranging from small-molecule liquid crystals to inhomogeneous polymers, to demonstrate these great advantages of FMC simulations, which can be performed in continuum as well as on a lattice.