Dynamic chemistries can impart fascinating properties to polymeric materials such as high mechanical strength, self-healing, shape memory, 3D printability, and conductivity.Incorporating multiple dynamic bonds into polymer systems can afford an attractive and efficient approach to endow multiple functionalities. This presentation will demonstrate some of the strategies my group is developing to use complementary dynamic interactions to control the properties of soft materials. In particular, I will highlight the use of dynamic covalent chemistry in concert with hydrogen bonding to prepare high strength hydrogels.