We will present a structural investigation of a novel kind of dynamic supramolecules, namely self-assembled amphiphilic block copolymers (called Dynablocks) that display a reversible covalent and tunable association of their molecular connections between the hydrophilic and hydrophobic blocks and can select their own constituents among several hydrophilic possibilities thanks to a variation of environmental parameters [1, 2]. Our system is composed of different hydrophilic blocks (PEG\textsubscript{n} benzylamines or anilines) in competition for the association with one hydrophobic block (aldehyde). We investigate the potential abilities of this system for the expression of various combinatorial mesophases from a same set of building blocks by pD modulation as a function of hydrophilic blocks lengths \( n \) by coupling Small Angle Neutron and X-rays Scattering (SANS and SAXS), and Static and Dynamic Light Scattering (SLS and DLS). We evidence the shape changes in supramolecular systems with pD variation (Fig. 1) and discuss the effects of length PEG chain \( n \), reactivity and excess constituents on self assemblies [3]. This work appears to be of interest for the analysis of complex dynamic combinatorial libraries and opens the way to a better understanding and tuning of Dynablocks supramolecular polymers.

![Fig. 1: Example of SANS measurements as a function of pD for one specific competition: PEG\textsubscript{11}ArI/PEG\textsubscript{11}BzI. The black lines represent the best fit. The curves have been shifted for clarity.](image)