Ion-containing polymers have experienced a resurgence of research attention due to the many emerging applications that rely on tailored electrostatic interactions. This lecture will highlight ion-containing polymers as antimicrobial coatings, self-healing films, drug delivery vectors, and membranes for alternate energy devices. Recent attention has focused on ionic liquid monomers based on the imidazole ring, and the synthesis of novel imidazole and phosphonium-containing polyurethanes will be discussed. In addition, our recent attention is directed towards the preparation of functional ionenes, wherein the charge is a part of the polymer main chain as opposed to a pendant site. This lecture will highlight advances in polymer synthesis, polymer characterization, and emerging applications at the interface of various disciplines.