Ferrocene chemistry is well established whereas the chemistry of isoelectronic cobaltocenium salts is still rather underdeveloped, due to synthetic difficulties caused by the deactivating positive charge of cobaltocenium salts. However, with our newly developed methods, functionalized cobaltocenium derivatives are now accessible and can be exploited further as useful, air-stable, redox-responsive, polar synthons in ligand design and coordination chemistry, redox and electrochemistry, catalytic applications, and bioorganometallic chemistry. An overview of our work in these areas and an outlook on future metallocenium chemistry will be given in this lecture.