Significance: Crossed olefin metathesis is a challenge in organic chemistry because of the prevalence of side reactions from homo-metathesis. Hoveyda and co-workers report a crossed metathesis with high E/Z-selectivity generating trisubstituted haloalkenes. The reaction shows good to excellent E/Z-selectivity and can generate either the E or Z product depending on the stereochemistry of the starting olefin.

Comment: Alkenyl chloride products could be generated in good to excellent yields wherein the trans product was formed with higher E/Z ratios. Additionally, the alkenyl bromide products could be generated. The improved selectivity for the trans-olefin starting material was explained with the stereochemical model. In the case of the Z-olefin, the energy gap between the two potential pathways is less because steric repulsion is significant in both pathways, leading to lower E/Z ratios.