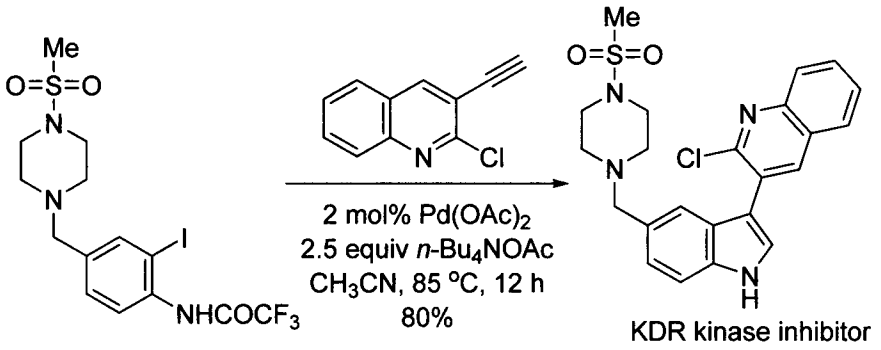

3.5.5 Heck Reaction

The Heck reaction, first disclosed independently by Mizoroki and Heck in the early 1970s, is the Pd-catalyzed coupling reaction of organohalides (or triflates) with olefins. In recent years, this transformation has become an indispensable tool for organic chemists. Inevitably, many applications to heterocyclic chemistry have been pursued and successfully executed. The greatest utility of the intramolecular Heck reaction was captured in Section 3.2 in this chapter. Intermolecular Heck reactions will be focused on this section.

Triptans have provided a futile ground for indole synthesis employing both the Heck and the intramolecular Heck reaction. In Glaxo's process synthesis of naratriptan,[79] the reaction of 5-bromoindole with *N*-methyl-4-piperidone gave the *N*-methyl-tetrahydropyridinyl substituted indole. The Heck reaction between the 5-bromoindole and the *N*-methylvinylsulfonamide was carried out on 700-g scales. Both double bonds of the resulting diene were hydrogenated to give naratriptan hydrochloride as white crystals in 71% yield after recrystallization from hot water.