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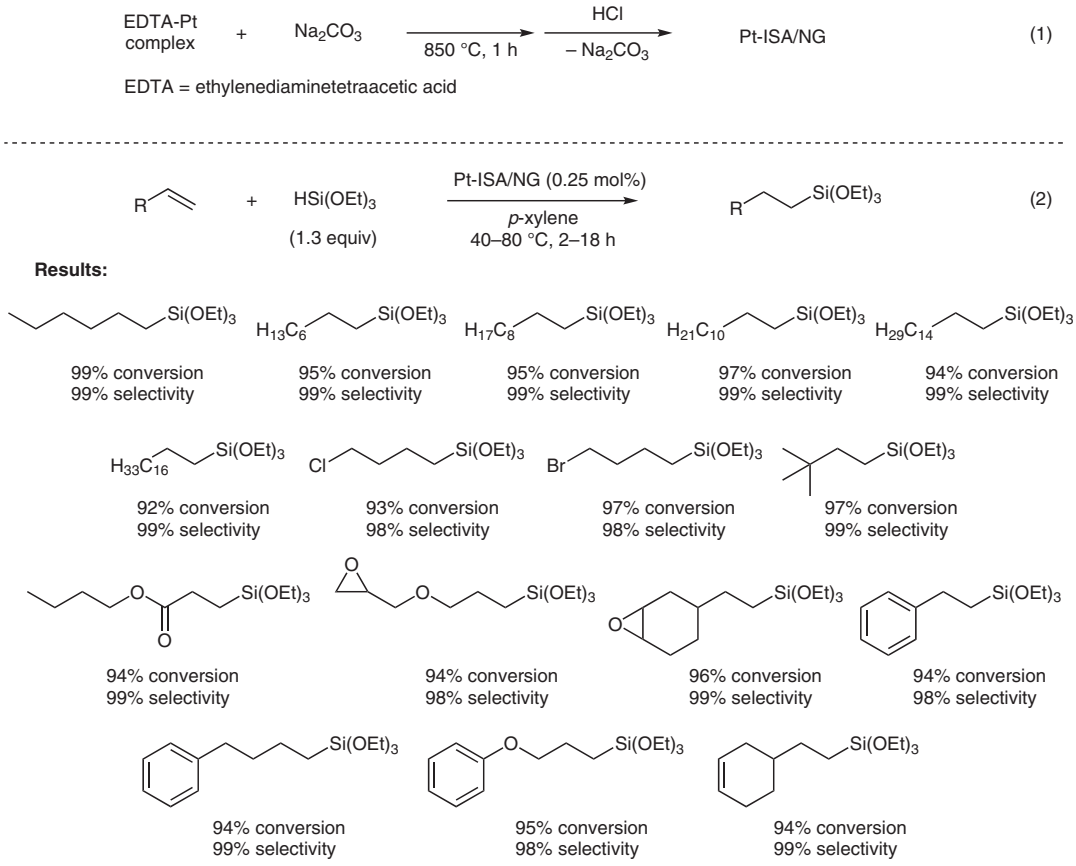
One-Pot Pyrolysis to N-Doped Graphene with High-Density Pt Single Atomic Sites as Heterogeneous Catalyst for Alkene Hydrosilylation

ACS Catal. **2018**, *8*, 10004–10011.

Hydrosilylation of Alkenes Catalyzed by Platinum on N-Doped Graphene



Significance: Single-atom platinum catalyst supported on N-doped graphene (Pt-ISA/NG) was prepared by heating a mixture of an EDTA–Pt complex and Na_2CO_3 at 850 °C for one hour, followed by removal of the Na_2CO_3 with dilute HCl (eq. 1). Pt-ISA/NG catalyzed the hydrosilylation of alkenes with triethoxysilane to give the corresponding silylated alkanes in ≤99% conversion and ≤99% selectivity (eq. 2).

Comment: The authors have previously reported the preparation of the EDTA–Pt complex (*Nano Res.* **2018**, *11*, 3088). In the hydrosilylation of octan-1-one with triethoxysilane, Pt-ISA/NG was reused four times without significant loss of its catalytic activity. TEM, EDX, HAADF-STEM, and EXAFS studies on the recovered Pt-ISA/NG indicated that the structural and electronic integrity of Pt-ISA/NG was maintained under the reaction conditions.

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