

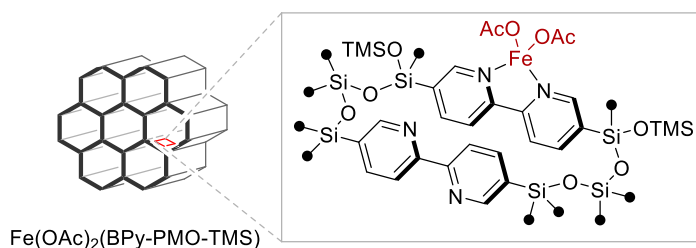
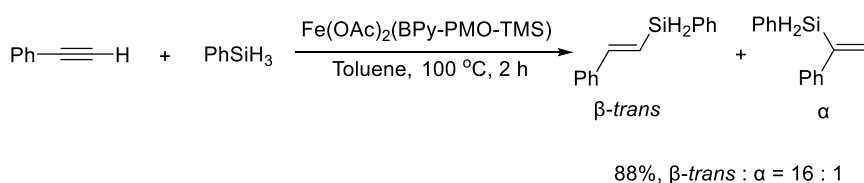
## Immobilized Iron Complex on Bipyridine-Based Periodic Mesoporous Organosilica for Hydrosilylation of Alkynes

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Periodic mesoporous organosilica containing 2,2'-bipyridine groups (BPy-PMO) in the organosiloxane framework has been applied as a solid ligand for a wide variety of metal complexes.<sup>1)</sup> In BPy-PMO, the BPy units are arranged in the hexagonal mesopore wall and the relative position of the BPy groups are highly regulated by the framework. By taking advantage of this feature, we hypothesized that a 1 : 1 iron complex of BPy, which is difficult to synthesize in a solution state, would be selectively formed on the pore surfaces of BPy-PMO.

Fe(OAc)<sub>2</sub> was successfully immobilized on TMS-endcapped BPy-PMO by simply mixing Fe(OAc)<sub>2</sub> and BPy-PMO-TMS in EtOH. The immobilized Fe complex, Fe(OAc)<sub>2</sub>(BPy-PMO-TMS), showed high catalytic activity and regioselectivity in hydrosilylation of alkynes. In contrast, the corresponding homogeneous complex Fe(OAc)<sub>2</sub>/BPy and a grafted Fe(OAc)<sub>2</sub>/BPy on MCM-41 exhibited low activity and regioselectivity. Furthermore, Fe(OAc)<sub>2</sub>(BPy-PMO-TMS)-catalyzed hydrosilylation can be applied for various alkynes including terminal alkynes and internal alkynes, and it can be reused at least five times.



1) M. Waki, Y. Maegawa, K. Hara, Y. Goto, S. Shirai, Y. Yamada, N. Mizoshita, T. Tani, W.-J. Chun, S. Muratsugu, M. Tada, A. Fukuoka, S. Inagaki, *J. Am. Chem. Soc.* **2014**, 136, 4003.