The influence of ionic liquid solutions on the C-H activation in CH$_4$ by a PtCl$_2$

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Theoretical study on the mechanism of C-H activation of CH$_4$ catalyzed by PtCl$_4^{2-}$ in ionic liquid solution of concentrated H$_2$SO$_4$ (PEER) show that the immediate product of the C-H activation step looks like a metal hydride which differs from that found in both the Periana [(bpym)PtCl$_2$] and Shilov (PtCl$_4^{2-}$) systems, and is also highly accessible. Detail discussion on the structures and energetics of the reaction mechanism will be presented.