

세미나 초록

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발표 주제	C-H Bond Functionalization
	<p>In the last 15 years, our research group has contributed on the development of new synthetic methods based on the catalytic C-H functionalization and the application of the developed methods into late-stage C-H modification, which can be a valuable step-stone in medicinal chemistry and drug discovery.</p> <p>In particular, the C-H functionalization has been recognized as an efficient strategy for the construction of bioactive heterocyclic molecules. In this context, our group disclosed the catalytic formation of indenopyrazolopyrazolones using allylic acetals as highly activated acrolein oxonium precursors.¹ With the importance of <i>N</i>-heterocycles in pharmaceuticals, agrochemicals, and functional materials, we also explored the unprecedented reductive and redox-neutral alkylations of various <i>N</i>-heterocycles using phosphonium and sulfoxonium ylides as novel alkylating surrogates.²</p> <p>The lecture will address the brief background and highlight on selected examples.</p> <div style="text-align: center; margin-top: 10px;"> <p>The figure contains two main reaction schemes. The top scheme, titled '< tandem C-H alylation and dipolar cycloaddition >', shows a benzene derivative reacting with an allylic acetal (with OR groups) in the presence of Ru(II) catalyst to form a product via a tandem process involving C-H alylation and endo-[3+2] dipolar cycloaddition. The bottom scheme, titled '< C-H alkylation of biologically relevant N-heterocycles >', shows a heterocyclic molecule reacting with a phosphonium ylide (CH2+-PPh3) or a sulfoxonium ylide (CH2+-SOMe2) under different conditions (reductive methylation vs. redox-neutral methylation) to yield different methylated products. A third part shows the conversion of a Hantzsch ester to an alkyl radical, which then reacts with a nucleophile.</p> </div>
발표 내용	<p>Selected References</p> <ol style="list-style-type: none"> 1. (a) Lee, H.; Kang, D.; Han, S. H.; Chun, R.; Pandey, A. K.; Mishra, N. K.; Hong, S.; Kim, I. S.* <i>Angew. Chem., Int. Ed.</i> 2019, <i>58</i>, 9470–9474. (c) Min, S.; Kim, T.; Jeong, T.; Yang, J.; Oh, Y.; Moon, K.; Rakshit, A.; Kim, I. S.* <i>Org. Lett.</i> 2023, <i>25</i>, 4298–4302. 2. (a) Han, S.; Chakrasali, P.; Park, J.; Oh, H.; Kim, S.; Kim, K.; Pandey, A. K.; Han, S. H.; Han, S. B.; Kim, I. S.* <i>Angew. Chem., Int. Ed.</i> 2018, <i>57</i>, 12737–12740. (b) An, W.; Choi, S. B.; Kim, N.; Kwon, N. Y.; Ghosh, P.; Han, S. H.; Mishra, N. K.; Han, S.; Hong, S.; Kim, I. S.* <i>Org. Lett.</i> 2020, <i>22</i>, 9004–9009. (d) Ghosh, P.; Kwon, N. Y.; Kim, S.; Han, S.; Lee, S. H.; An, W.; Mishra, N. K.; Han, S. B.; Kim, I. S.* <i>Angew. Chem., Int. Ed.</i> 2021, <i>60</i>, 191–196. (e) Ghosh, P.; Kwon, N. Y.; Byun, Y.; Mishra, N. K.; Park, J. S.; Kim, I. S.* <i>ACS Catal.</i> 2022, <i>12</i>, 15707–15714.