

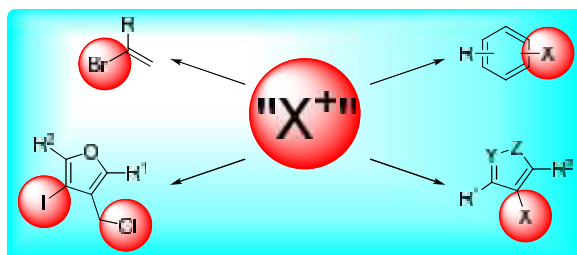
Efficient, Practical and Metal-Free Halogenation of Organic Compounds

Charnsak Thongsornkleeb,* WilailakKaewsri, JumreangTummatorn,
SomsakRuchirawat

Laboratories of Organic Synthesis and Medicinal Chemistry, Chulabhorn Research Institute, and Program in Chemical Biology, Center of Excellence on Environmental Health and Toxicology (EHT), Chulabhorn Graduate Institute, 54 KamphaengPhet 6 Road, Laksi, Bangkok 10210, Thailand.
E-mail: charnsak@cri.or.th

The ability to incorporate a halogen atom onto an organic compound continues to be an important tool for organic chemists. We have been exploring different ways of installing halogen atoms in various types of organic substrates with the aim to devise a new, practical and metal-free method using reagent or combination of reagents which are commonly available in most organic laboratories. We have shown that a combination of TMSCl and LiBr in the presence of catalytic tetrabutylammonium bromide (TBAB) can be an effective and practical source of HBr for

hydrobromination of terminal alkynes. Activation of acyclic secondary enynyl alcohols by ICl could lead to the corresponding furan products containing two halogen handles in one step. For aromatic compounds, electrophilic halogenation could easily occur when *N*-halosuccinimide was utilized in the presence of catalytic TMSCl. We continue to explore and employ these halogenation strategies in the synthesis of various halogen-containing building blocks and to develop these protocols into a practical tool for organic synthesis.



REFERENCES

1. Bunrit, A.; Ruchirawat, S.; Thongsornkleeb, C. *Tetrahedron Lett.* **2011**, 52, 3124–3127.
2. Thongsornkleeb, C.; Rabten, W.; Bunrit, A.; Tummatorn, J.; Ruchirawat, S. *Tetrahedron Lett.* **2012**, 53, 6615–6619.
3. Maibunkaew, T.; Thongsornkleeb, C.; Tummatorn, J.; Bunrit, A.; Ruchirawat, S. *Synlett* **2014**, 25, 1769–1775.



Charnsak Thongsornkleeb (ชาตศักดิ์ทองสรณ์กลิ่น). University of Connecticut (BS 2000), Massachusetts Institute of Technology (PhD 2006), City University of New York (Postdoctoral Research Fellow 2006-2008), Chulabhorn Research Institute (Researcher in the Laboratory of Organic Synthesis, 2008 – present), Chulabhorn Graduate Institute (Instructor in the Chemical Biology Program, 2009 – present).