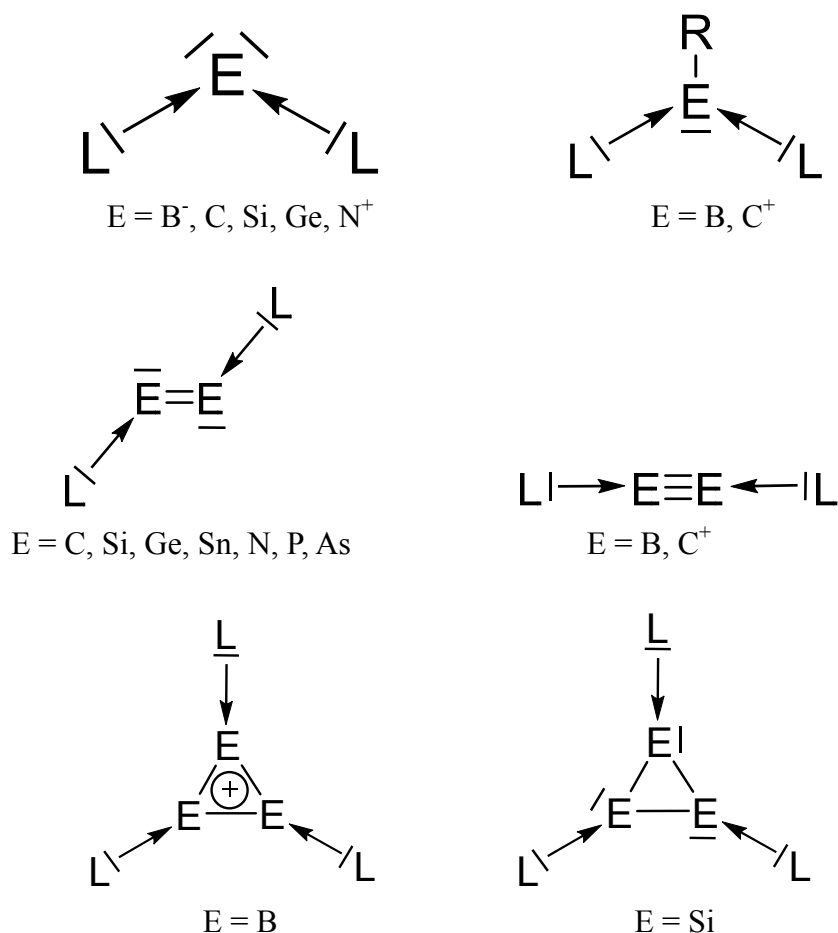


Dative Bonding in Main-Group Compounds - 100 Years of the Lewis Bonding Paradigm

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The lecture focuses on theoretical and experimental aspects of chemical bonding in one-, two- and three-centre complexes of main-group atoms E, which is described in terms of dative bonds. It is shown that the bonding model of donor-acceptor interactions¹ provides insight and understanding for unusual geometries and reactivities. It served in recent years as useful guideline for the explanation of the bonding situation and the successful prediction of novel molecules.² The field of experimentally known complexes which are shown below has greatly increased in the recent past with the support of quantum chemical calculations:



1. "Dative Bonding in Main-Group Compounds: A Case for More Arrows." Frenking, G. *Angew. Chem. Int. Ed.* **2014**, 53, 6040.

2. Reviews: (a) "New Bonding Modes of Carbon and Heavier Group 14 Atoms Si - Pb". Frenking, G.; Tonner, R.; Klein, S.; Takagi, N.; Shimizu, T.; Krapp, K. K. Pandey, P. Parameswaran, *Chem. Soc. Rev.* **2014**, 43, 5106. (b) "Donor-Acceptor Bonding in Novel Low-Coordinated Compounds of Boron and Group-14 Atoms C - Sn". Frenking, G.; Hermann, M.; Andrada, D.A.; Holzmann, N. *Chem. Soc. Rev.*, **2016**, 45, 1129. (c) "Dative Bonding in Main Group Compounds". L. Zhao, M. Hermann, N. Holzmann, G. Frenking, *Coord. Chem. Rev.* **2017**, 344, 163.