

## Supporting Information

### **Role of ligands on the stability of $B_nX_n$ and $CB_{n-1}X_n$ ( $n = 5-10$ ; $X = H, F, CN$ ) and their potential as building blocks of electrolytes in lithium ion batteries**

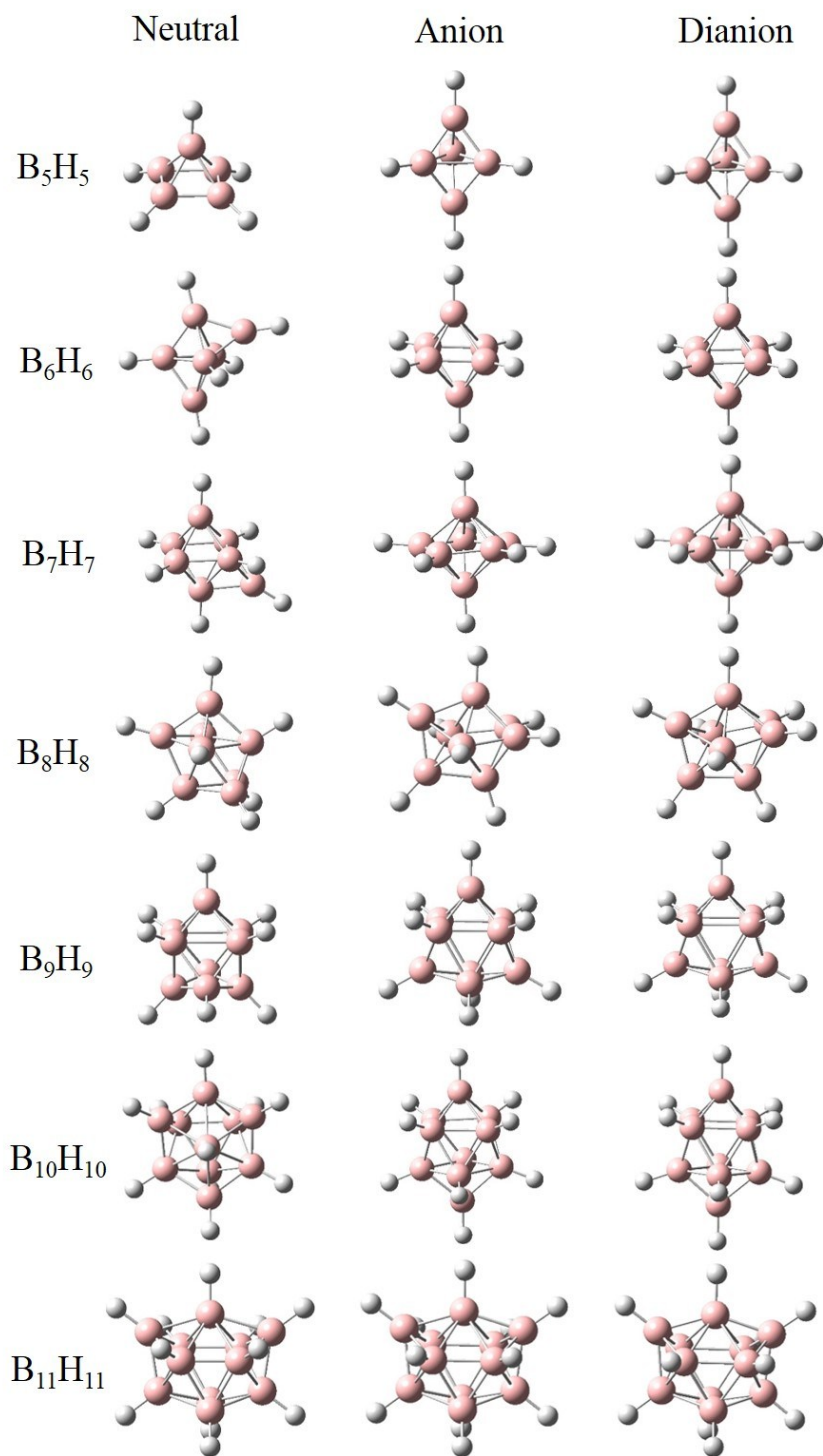
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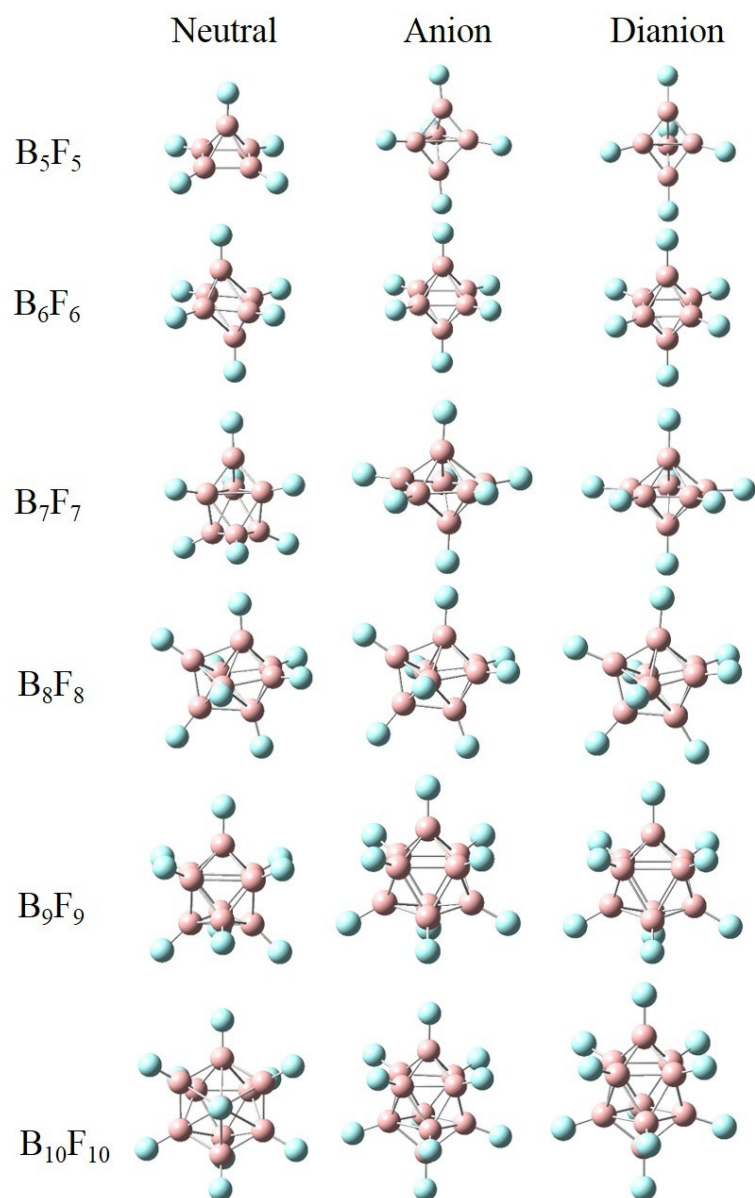
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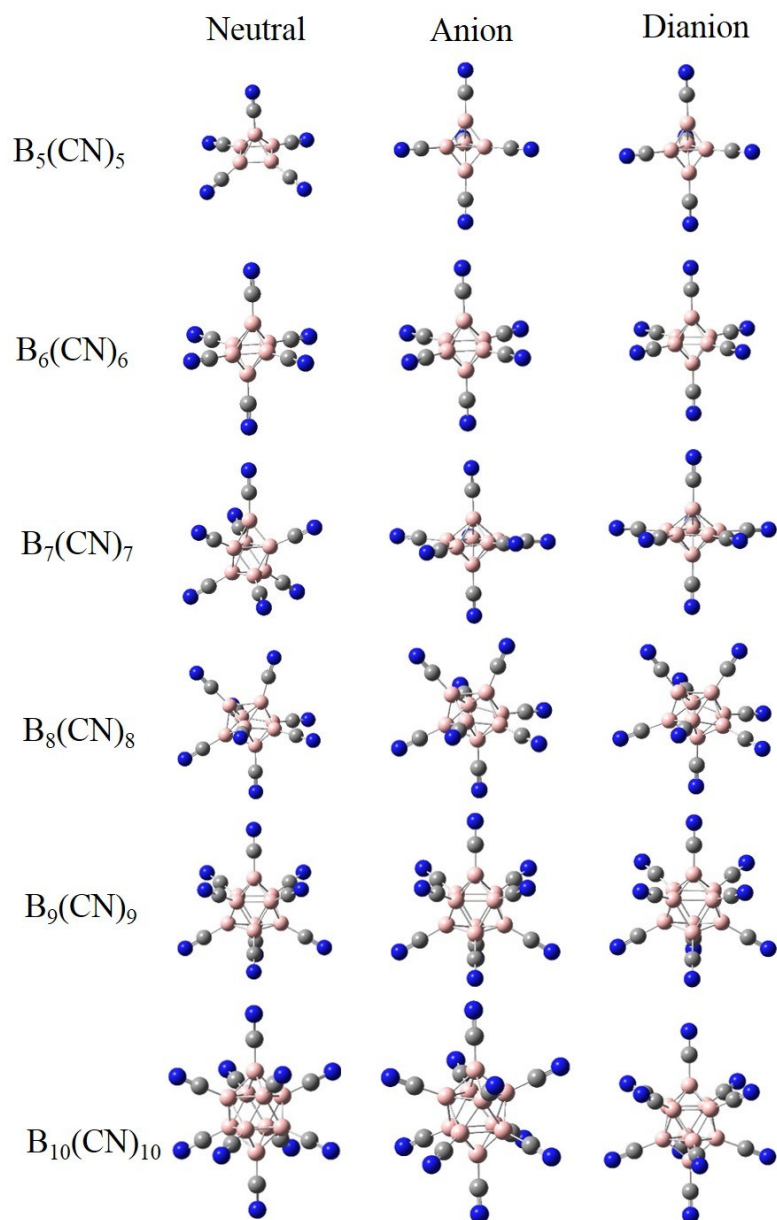
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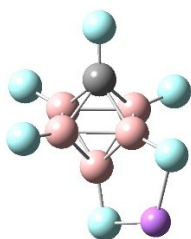
**Fig. S1** The lowest energy structures of neutral, anion and dianion  $B_nH_n$  ( $n = 5-11$ ).



**Fig. S2** The lowest energy structures of neutral, anion and dianion  $B_nF_n$  ( $n = 5-10$ ).



**Fig. S3** The lowest energy structures of neutral, anion and dianion  $B_n(CN)_n$  ( $n = 5-10$ ).



**Fig. S4** The second lowest energy structure of  $LiBC_5F_6$ .