DR-6. C–H FUNCTIONALIZATION METHODOLOGY IN THE SYNTHESIS OF NOVEL AZAHETEROCYCLIC CARBORANES

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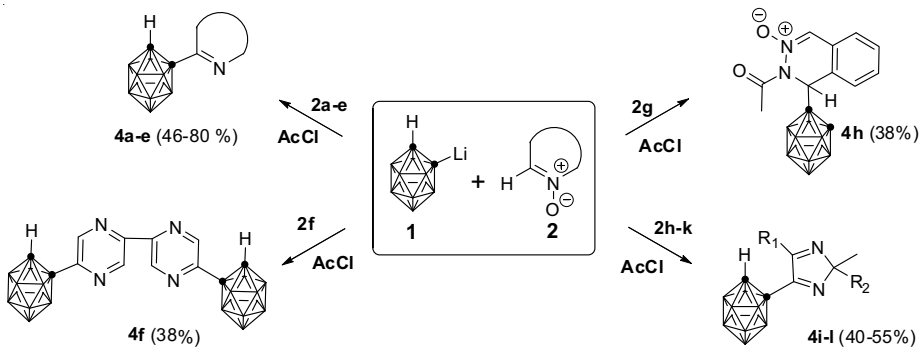
Carboranes are known to be 3D polyhedral clusters with a special type of structural organization, relative chemical and thermal stabilities, as well as unique physicochemical properties. The enhanced interest to the functional derivatives of carboranes, especially to azaheterocyclic ones, is due to wide possibilities of their practical applications, especially as advanced photoluminescent materials, efficient catalytic reagents, perspective agents for boron neutron capture therapy.

One of the promising approaches for obtaining new C-substituted carboranes is the methodology of direct C–H functionalization of aromatic and non-aromatic heterocyclic *N*-oxides [1]. It has been found that carboranyllithium **1** do react with different *N*-oxides of mono- and diazines, as well as with *2H*-imidazole 1-oxides **2**. These one-pot, uncatalyzed by transition metals C–Li/C–H couplings has been shown to result in the corresponding heterocyclic carboranes **4 a – k** [2–4].



2: quinoline-1-oxide (**a**), 2,2'-bipyridyl-1-oxide (**b**), quinoxaline-1-oxide (**c**), pyrimidine-1-oxide (**d**), 1,10-phenanthroline-1-oxide (**e**), pyrazine-1-oxide (**f**), phtalazine-2-oxide (**g**), 2,2-dimethyl-4-phenyl-*2H*-imidazole-1-oxide (**h**), 4-(4-bromophenyl)-2,2-dimethyl-*2H*-imidazole-1-oxide (**i**), 2-ethyl-2-methyl-4-phenyl-*2H*-imidazole-1-oxide (**j**), 4-(4-bromophenyl)-2-ethyl-2-methyl-*2H*-imidazole-1-oxide (**k**)

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