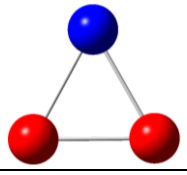
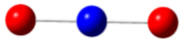
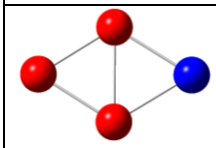
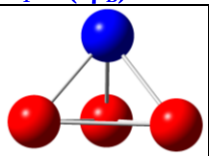
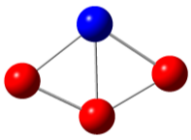
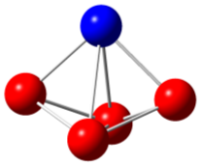
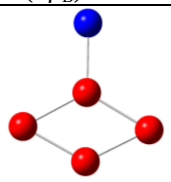
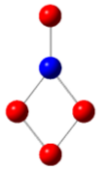
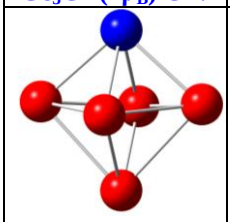
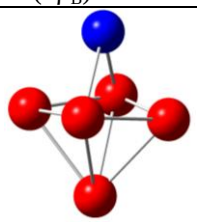
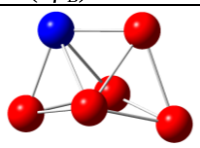
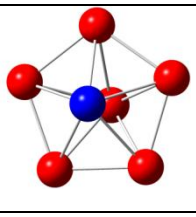
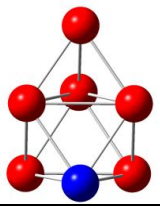
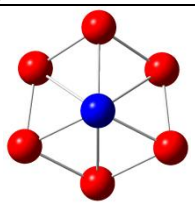
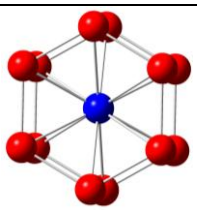
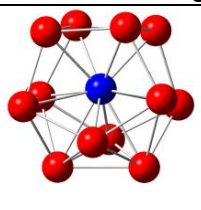
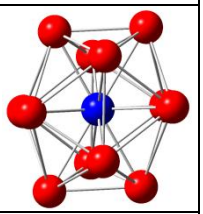
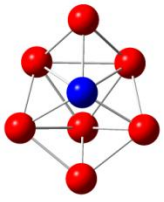
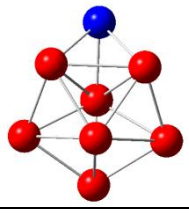
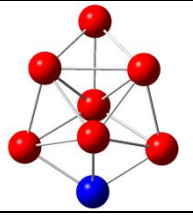
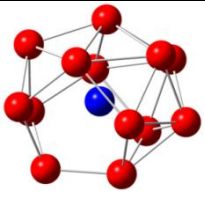
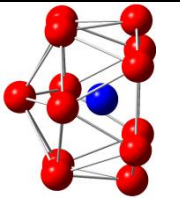
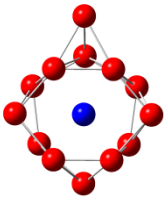
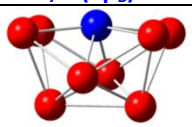
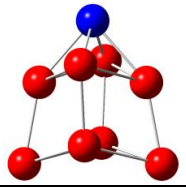
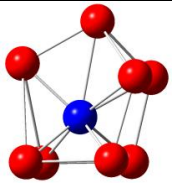
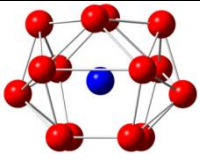
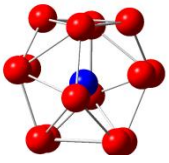
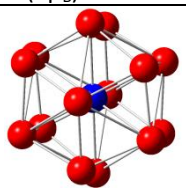
Electronic Supplementary Material (ESI) for RSC Advances.

Electronic Supplementary Information:

Ground State	Low energy Isomers		Ground state	Low energy Isomers	
					
Ge_1Cr ($4\mu_B$) Cinfv			**Ge_2Cr($4\mu_B$) C2v**	A ($4\mu_B$)+0.80eV	B($2\mu_B$)+2.39eV
					
Ge_3Cr ($4\mu_B$) C2v	A ($0\mu_B$) +0.06eV	B($4\mu_B$)+0.49eV	**Ge_4Cr($4\mu_B$) C2v**	A ($4\mu_B$)+1.18eV	B($4\mu_B$)+1.98eV
					
Ge_5Cr ($4\mu_B$) C2v	A ($4\mu_B$) +0.04eV	B($2\mu_B$)+0.44eV			

Ground State	Low energy Isomers		Ground state	Low energy Isomers	
					
Ge_6Cr ($2\mu_B$) C5v	A ($4\mu_B$) +0.17eV	B($2\mu_B$)+0.76eV	**$Ge_{12}Cr$($0\mu_B$) D6h**	A ($0\mu_B$)+0.39eV	B($4\mu_B$)+0.67eV
					
Ge_7Cr($0\mu_B$) Cs	A ($4\mu_B$) +0.22eV	B($2\mu_B$) +0.70eV	**$Ge_{13}Cr$($0\mu_B$) C1**	A($2\mu_B$) +0.19eV	B($2\mu_B$) +0.69eV
					
Ge_8Cr($0\mu_B$) C2v	A ($4\mu_B$) +0.94eV	B($0\mu_B$) +1.21eV	**$Ge_{14}Cr$($0\mu_B$) C2v**	A ($0\mu_B$) +0.01eV	B($2\mu_B$) +0.71eV

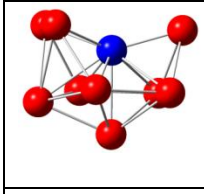
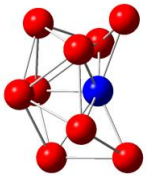
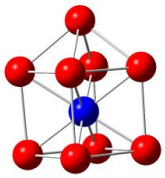
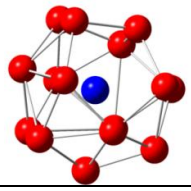
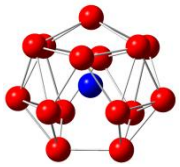
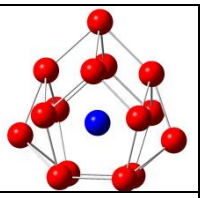
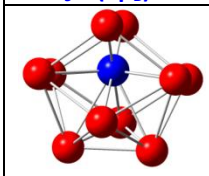
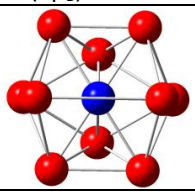
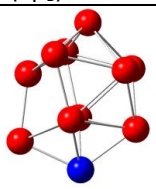
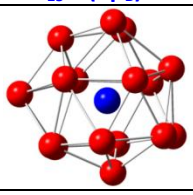
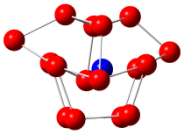
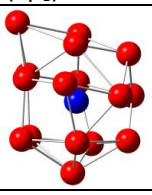
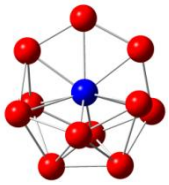
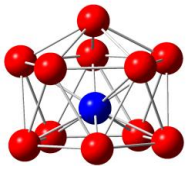
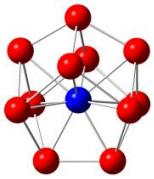
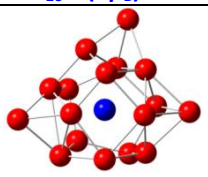
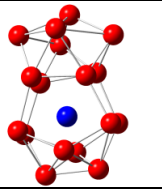
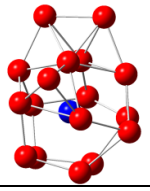
					
$Ge_9Cr(0\mu_B)$ C1	A ($2\mu_B$) +0.06eV	B($0\mu_B$) +0.29eV	**$Ge_{15}Cr(0\mu_B)$ C1**	A ($2\mu_B$) +0.33eV	B($2\mu_B$) +0.63eV
					
$Ge_{10}Cr(0\mu_B)$ C2v	A ($0\mu_B$) +0.01eV	B($4\mu_B$)+1.34eV	**$Ge_{16}Cr(2\mu_B)$ C2v**	A($0\mu_B$)+0.19eV	B($0\mu_B$)+0.75eV
					
$Ge_{11}Cr(0\mu_B)$ C2	A ($2\mu_B$) +0.14eV	B($2\mu_B$)+0.26eV	**$Ge_{17}Cr(0\mu_B)$ C1**	A ($0\mu_B$)+0.26eV	B($2\mu_B$)+0.35eV

Fig SI1. Selected optimized low energy isomers (n=1 to 17) the spin magnetic moments and point group symmetries

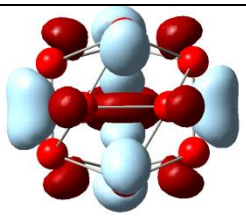
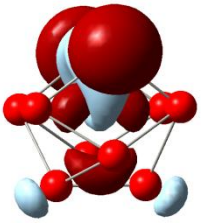
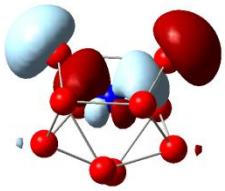
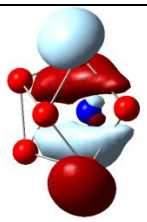
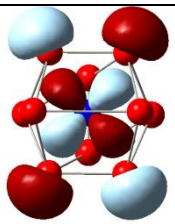
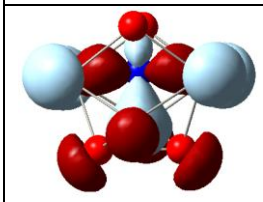
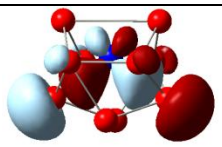
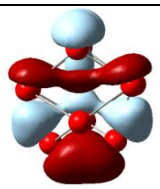
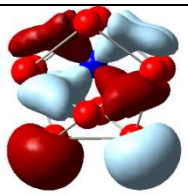
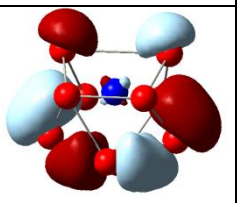
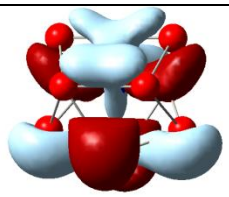
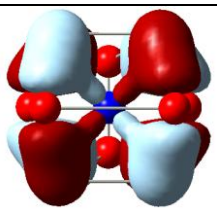
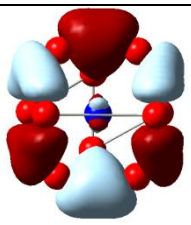
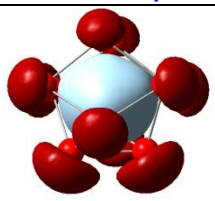
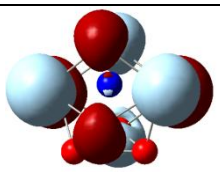
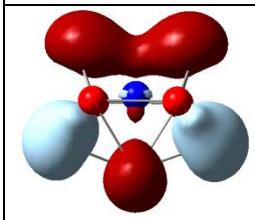
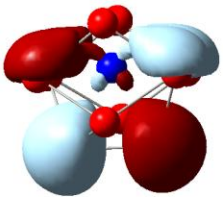
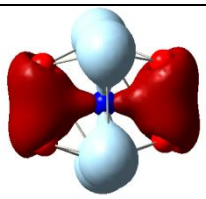
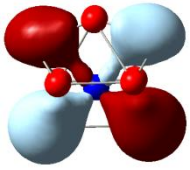
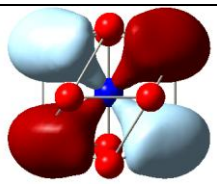
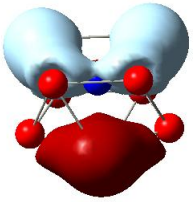
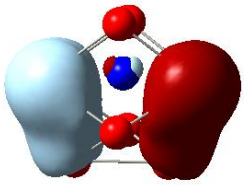
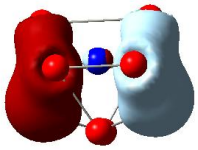
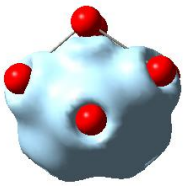
				
24 LUMO **Cr-3d$_{z^2}$**	23 HOMO **Cr-3d$_{x2-y2}$** + **Cr-4p$_z$**	22 **Cr-3d$_{xz}$** + **Cr-4p$_x$**	21 **Cr-4p$_y$**	20 **Cr-3d$_{xy}$**
				
19 **Cr-3d$_{z^2}$**	18 **Cr-3d$_{xz}$**	17 **Ge$_{10}$**	16 **Cr-3d$_{yz}$**	15 **Ge$_{10}$**
				
14 **Ge$_{10}$**	13 **Ge$_{10}$**	12 **Ge$_{10}$**	11 **Cr-4s**	10 **Ge$_{10}$**
				
9 **Ge$_{10}$**	8 **Ge$_{10}$**	7 **Ge$_{10}$**	6 **Ge$_{10}$**	5 **Ge$_{10}$**
				
4 **Ge$_{10}$**	3 **Ge$_{10}$**	2 **Ge$_{10}$**	1 **Ge$_{10}$**	

Fig SI2a. $CrGe_{10}$ orbitals. Cr and Ge_{10} fragments designations are given.

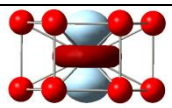
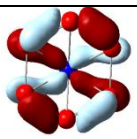
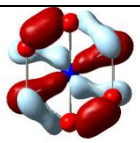
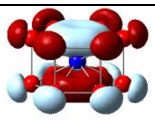
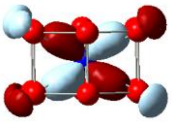
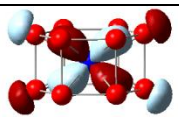
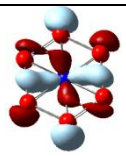
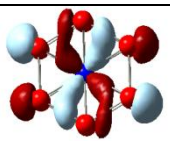
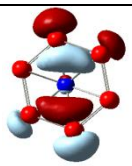
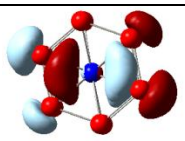
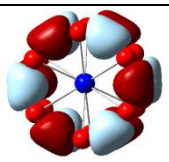
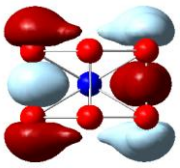
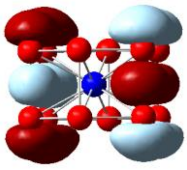
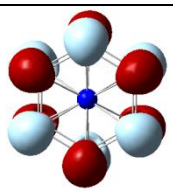
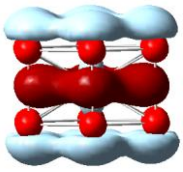
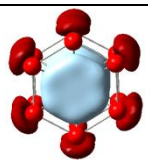
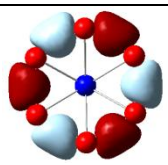
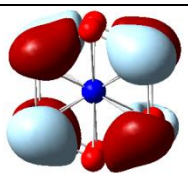
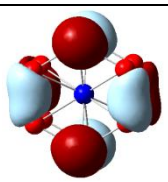
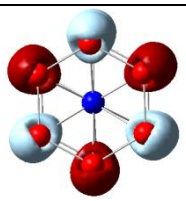
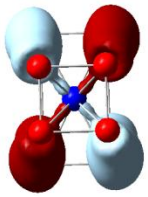
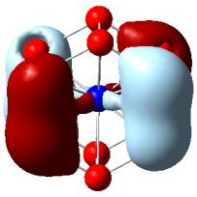
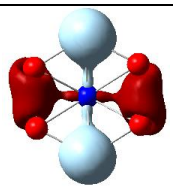
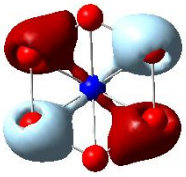
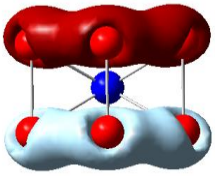
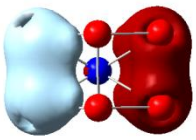
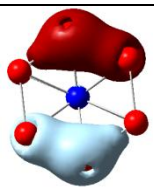
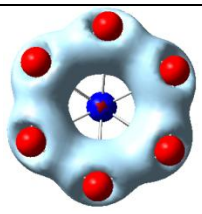
				
28 **Cr-3d$_{z2}$** LUMO 2D	27 **Cr-3d$_{x2-y2}$** HOMO 2D	26 **Cr-3d$_{xy}$** 2D	25 **Cr-4p$_{z}$** 2P	24 **Cr-3d$_{xz}$** 2D
				
23 **Cr-3d$_{yz}$** 2D	22 **Cr-3d$_{xy}$** 2D	21 **Cr-3d$_{x2-y2}$** 2D	20 **Cr-4p$_{y}$** 2P	19 **Cr-4p$_{x}$** 2P
				
18 **Ge$_{12}$** 1G	17 **Ge$_{12}$** 1F	16 **Ge$_{12}$** 1F	15 **Ge$_{12}$** 1G	14 **Ge$_{12}$** 1D
				
13 **Cr-4s** 2S	12 **Ge$_{12}$** 1F	11 **Ge$_{12}$** 1F	10 **Ge$_{12}$** 1F	9 **Ge$_{12}$** 1F
				
8 **Ge$_{12}$** 1D	7 **Ge$_{12}$** 1D	6 **Ge$_{12}$** 1D	5 **Ge$_{12}$** 1D	4 **Ge$_{12}$** 1P
				
3 **Ge$_{12}$** 1P	2 **Ge$_{12}$** 1P	1 **Ge$_{12}$** 1S		

Fig SI2b. $CrGe_{12}$ orbitals. Cr and Ge_{12} fragments designations are given.

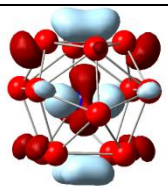
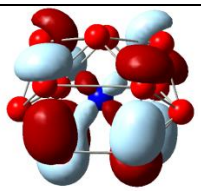
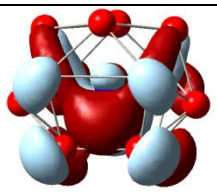
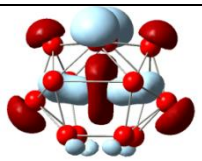
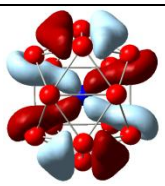
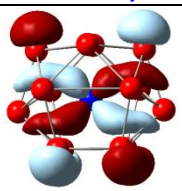
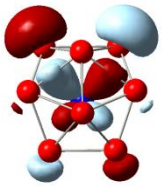
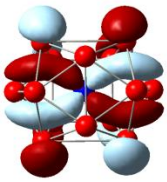
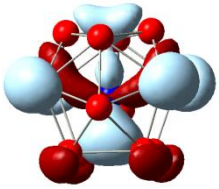
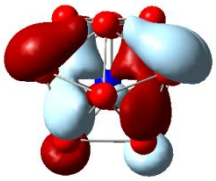
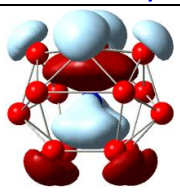
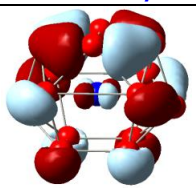
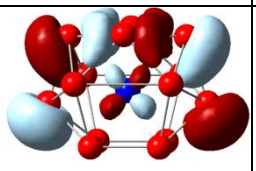
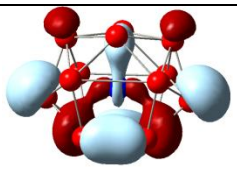
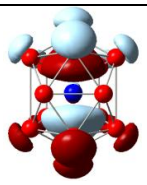
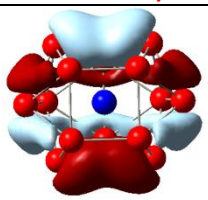
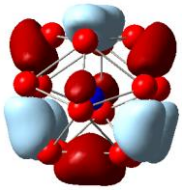
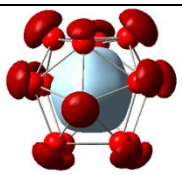
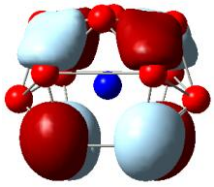
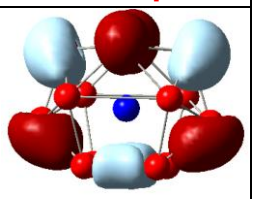
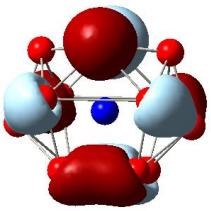
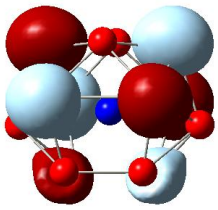
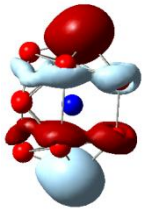
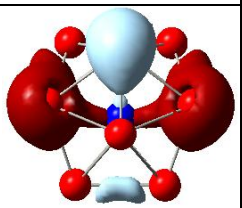
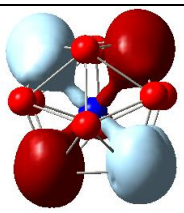
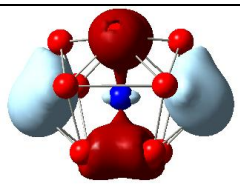
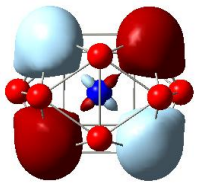
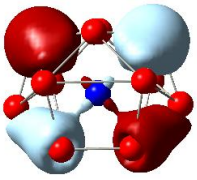
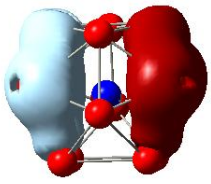
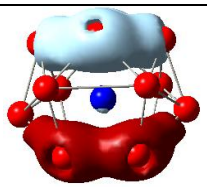
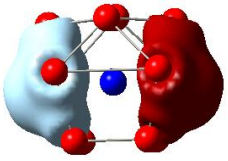
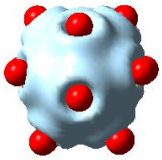
				
32 (LUMO) **Cr-3d$_{xy}$**	31 HOMO **Ge$_{14}$**	30 **Cr-3d$_{yz}$** + **Cr-4p$_z$**	29 **Cr-3d$_{x2-y2}$**	28 **Cr-3d$_{xz}$**
				
27 **Cr-3d$_{xy}$**	26 **Cr-3d$_{yz}$**	25 **Cr-3d$_{xz}$**	24 **Cr-3d$_z^2$**	23 **Ge$_{14}$**
				
22 **Cr-4p$_y$**	21 **Ge$_{14}$**	20 **Ge$_{14}$**	19 **Ge$_{14}$**	18 **Cr-4p$_x$**
				
17 **Ge$_{14}$**	16 **Ge$_{14}$**	15 **Cr-4s**	14 **Ge$_{14}$**	13 **Ge$_{14}$**
				
12 **Ge$_{14}$**	11 **Ge$_{14}$**	10 **Ge$_{14}$**	9 **Ge$_{14}$**	8 **Ge$_{14}$**
				
7 **Ge$_{14}$**	6 **Ge$_{14}$**	5 **Ge$_{14}$**	4 **Ge$_{14}$**	3 **Ge$_{14}$**
				
2 **Ge$_{14}$**	1 **Ge$_{14}$**			

Fig SI2c. $CrGe_{14}$ orbitals. Cr and Ge_{14} fragments designations are given.

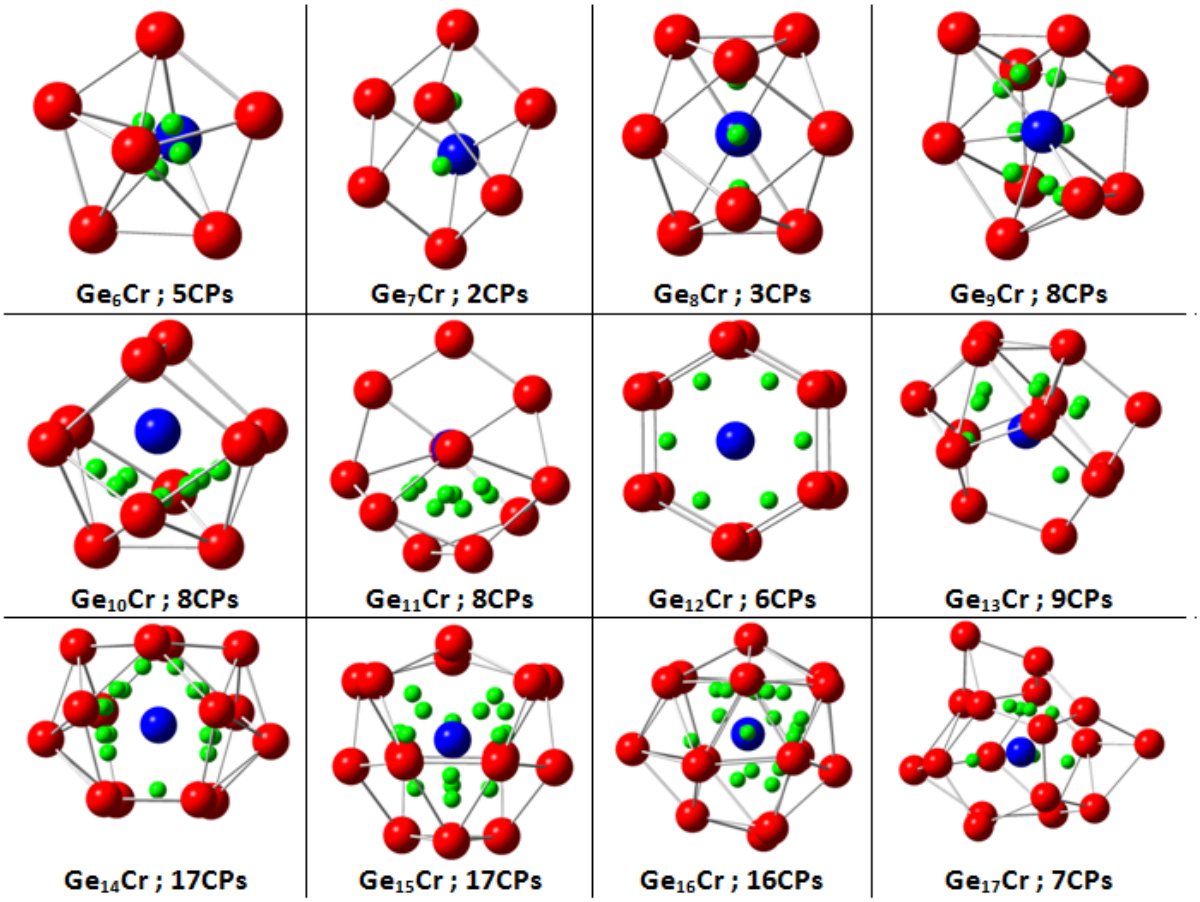


Fig SI3a. Ground state structures with the positions of (3, +3) Cage Critical Points (CCPs).

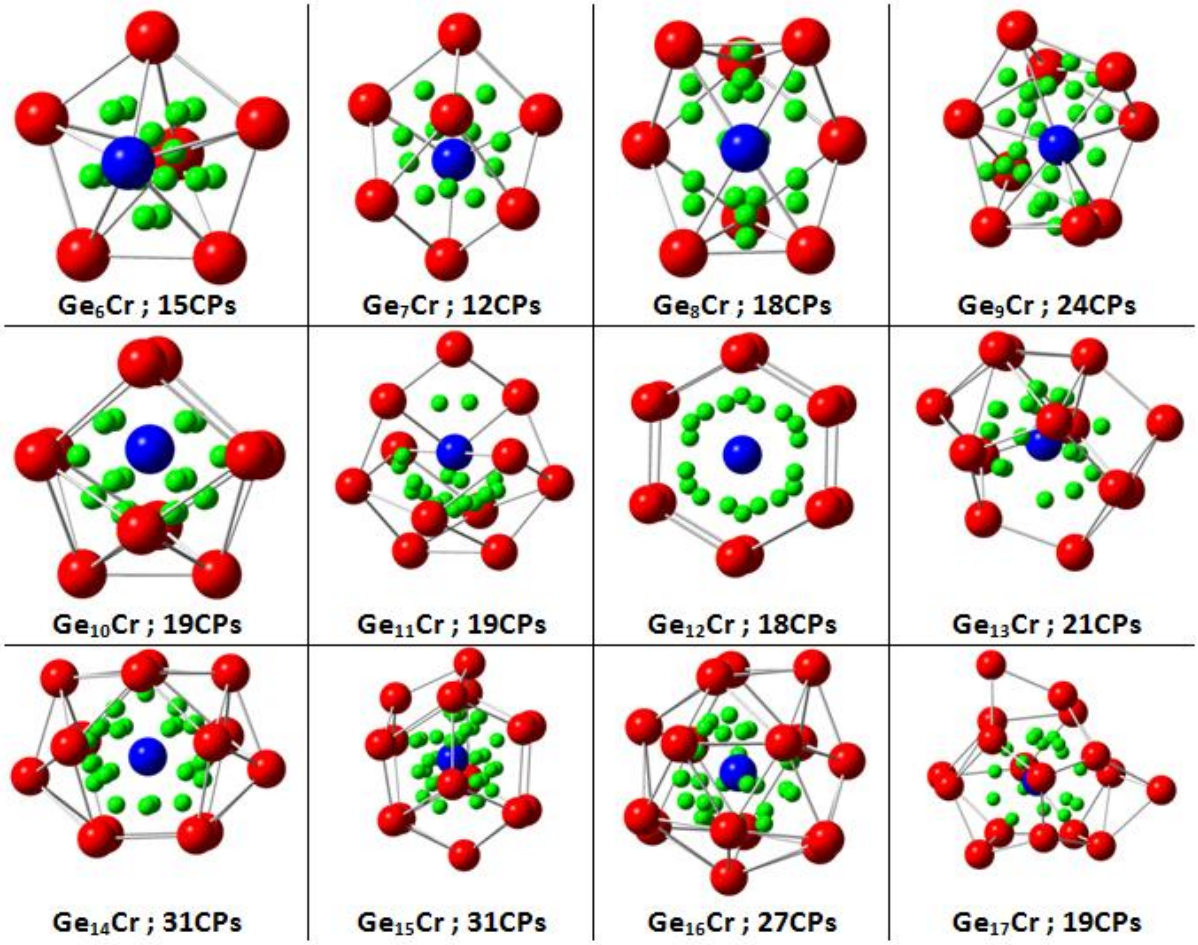


Fig SI3b. Ground state structures with the positions of (3, +1) Ring Critical Points (RCPs).

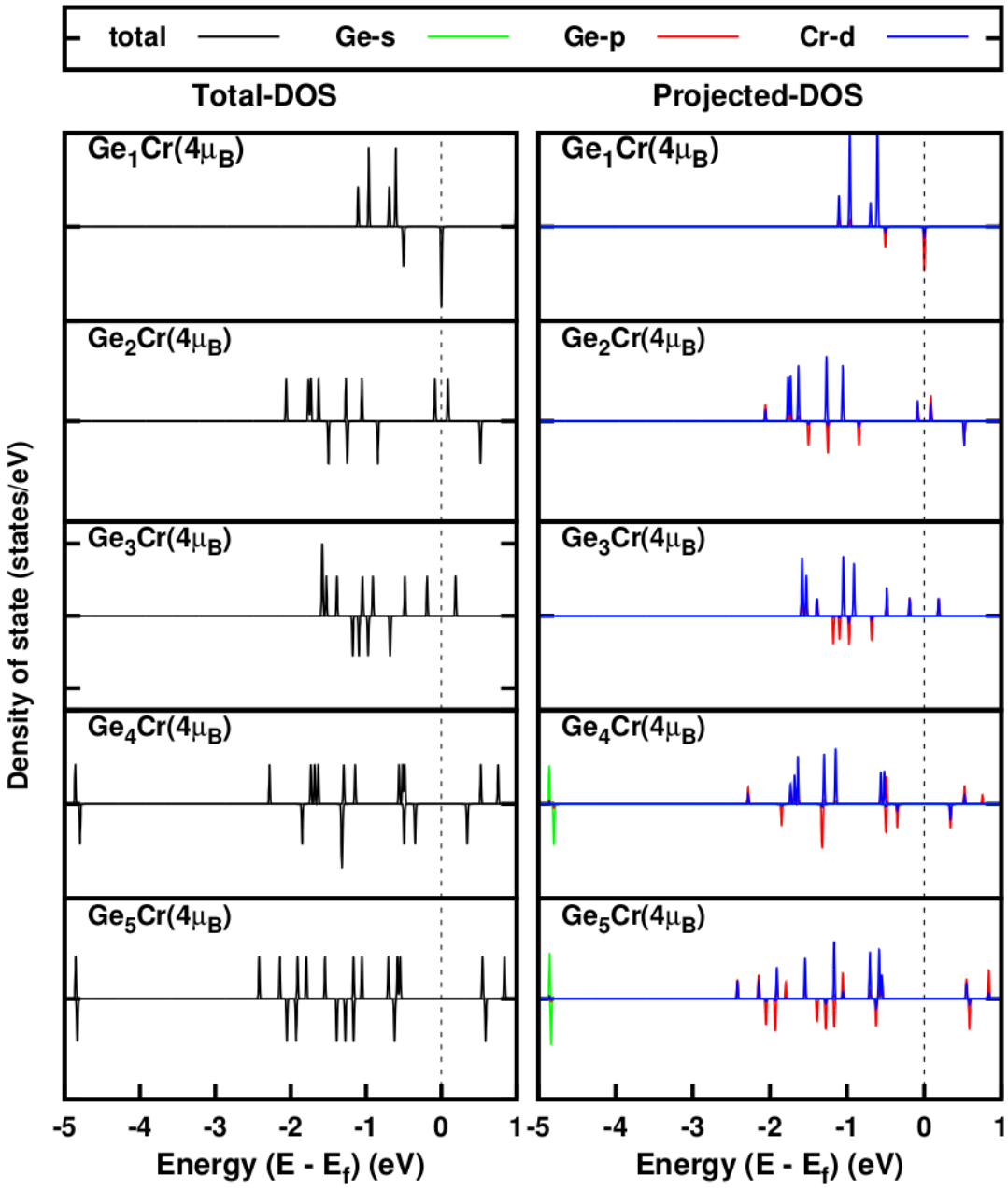


Fig. SI4a DOS and PDOS of different $CrGe_n$ (n=1-5) ground state clusters.

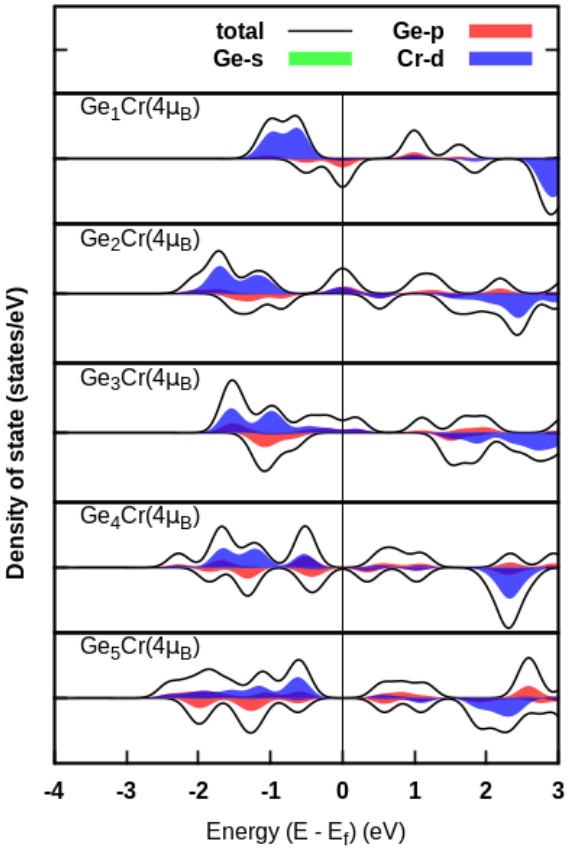


Fig. SI4b Variation of Spin induced DOS and PDOS of different low sized clusters (after introducing a finite broadening to the energy levels). Fermi energy level set to '0'

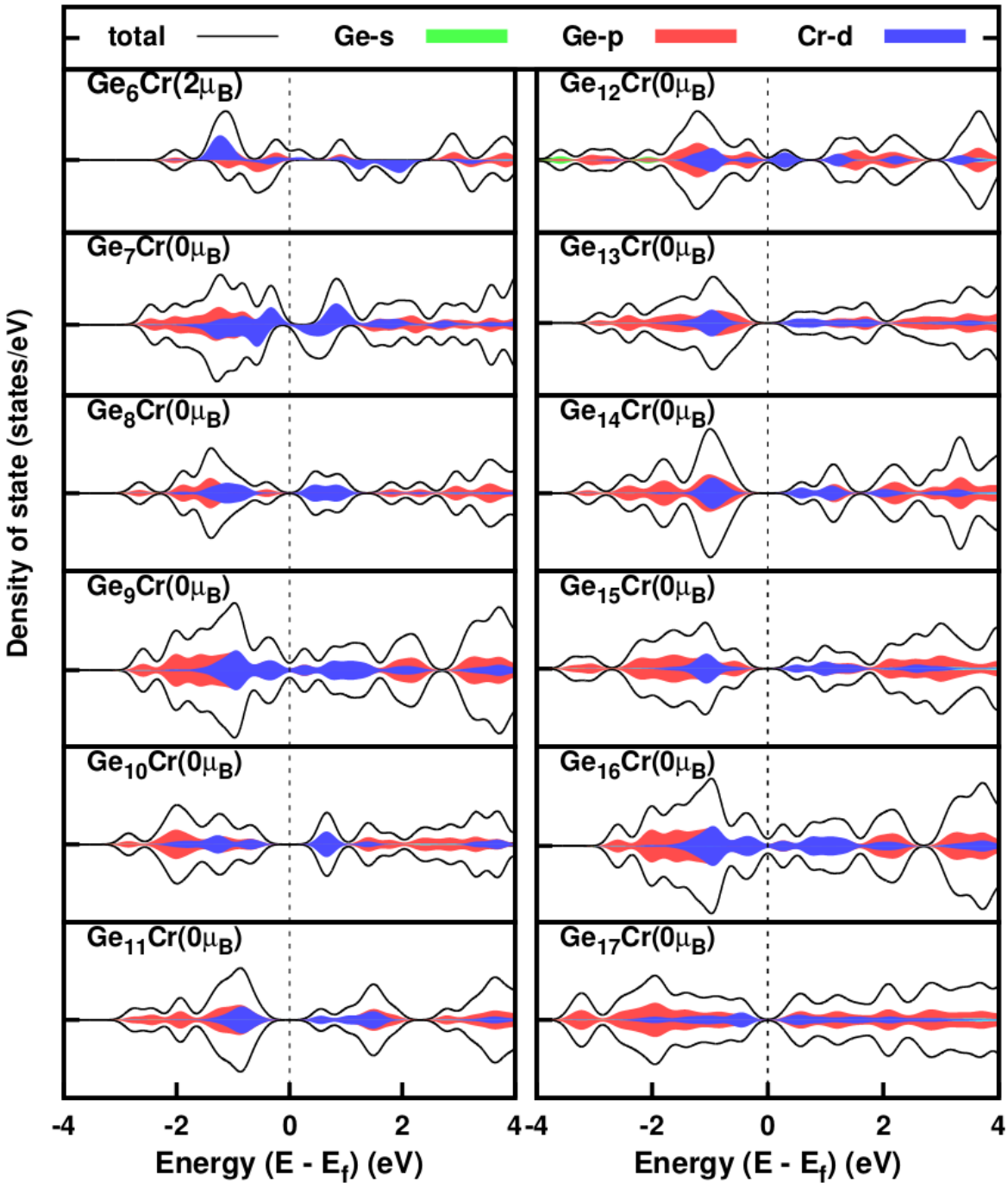


Fig. SI4c Variation of DOS and PDOS of different neutral clusters (after introducing a finite broadening to the energy levels) with shifted energy (E-EF) and Fermi energy is set to '0'