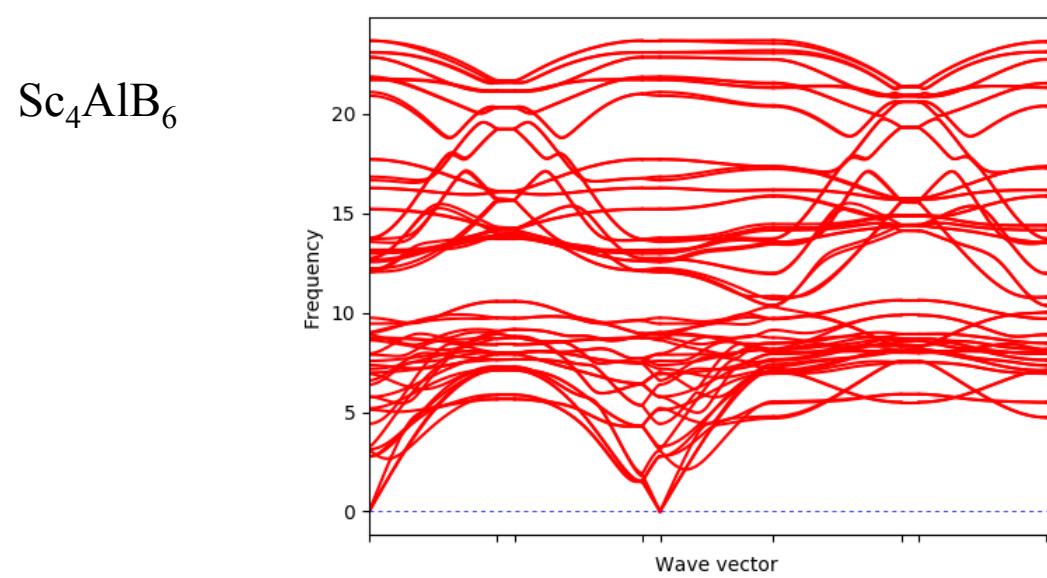
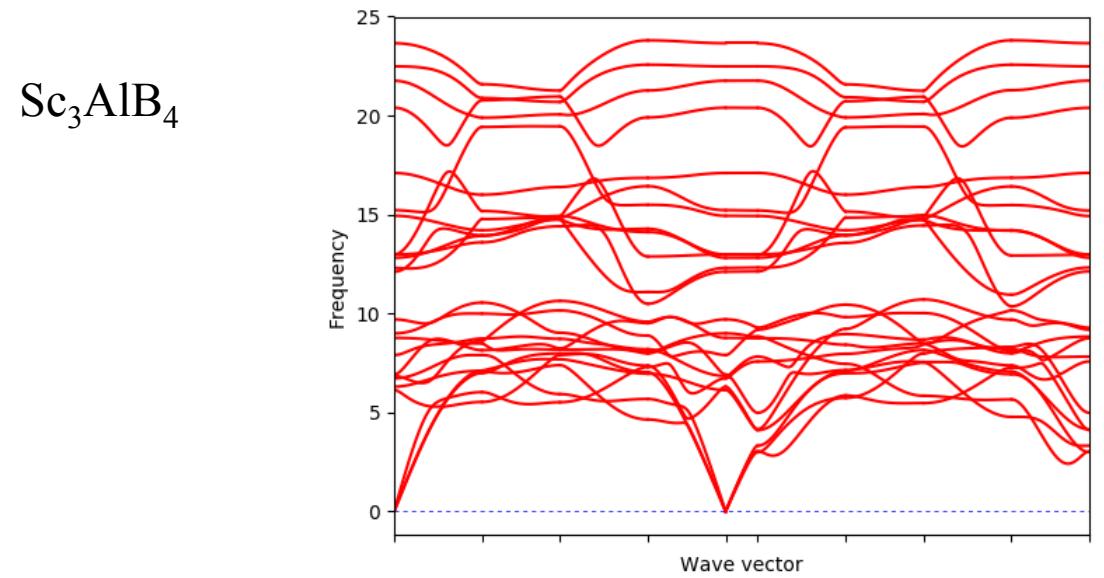
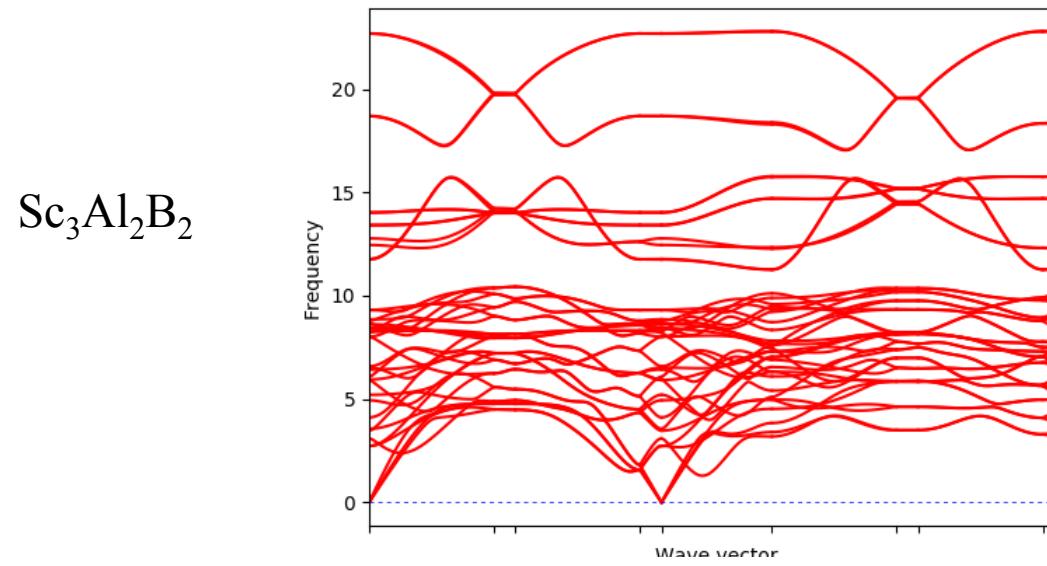
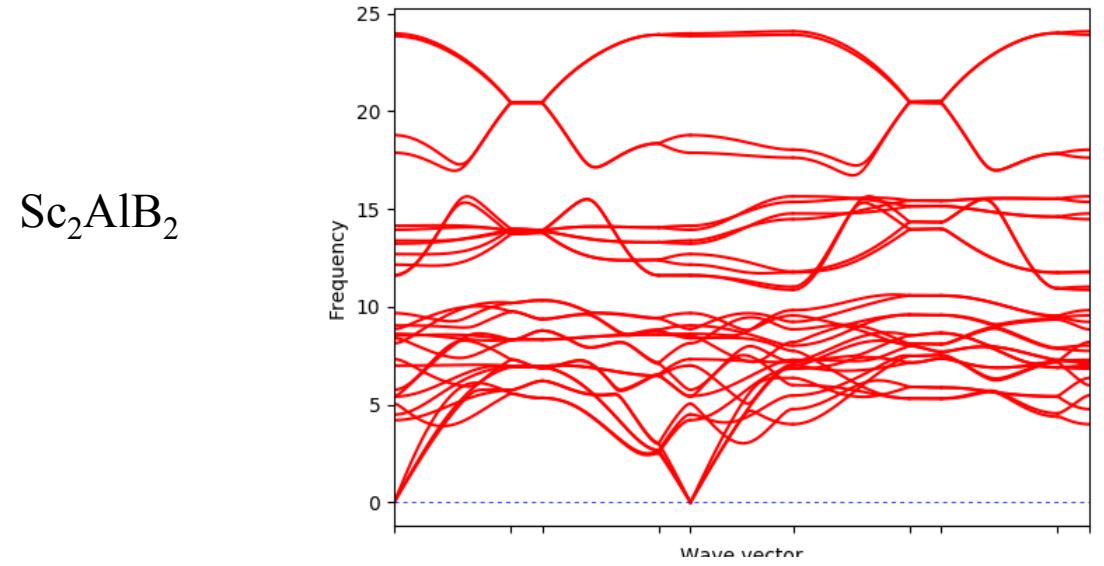
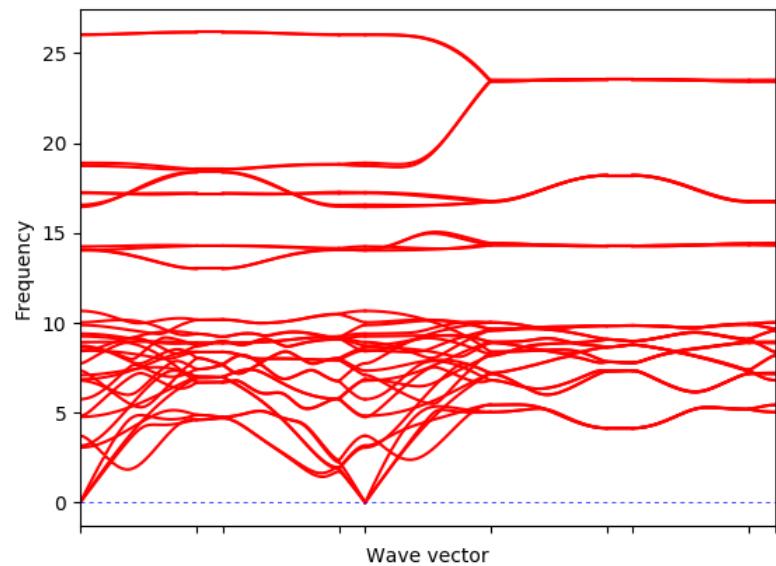


## Figure 1. Phonon band structures of MAB phases.

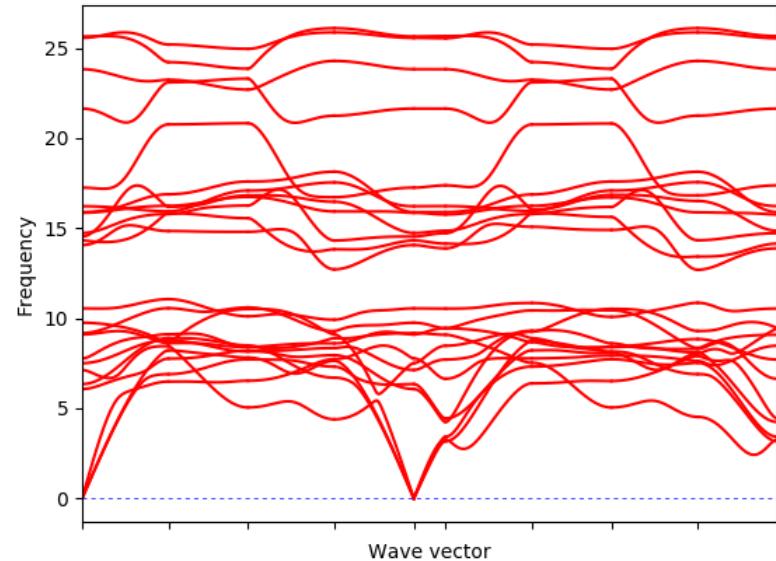
q point-path:  $(0\ 0\ 0)\rightarrow(0.5\ 0\ 0)\rightarrow(0.5\ 0.5\ 0)\rightarrow(0\ 0.5\ 0)\rightarrow(0\ 0\ 0)\rightarrow(0\ 0\ 0.5)\rightarrow(0.5\ 0\ 0.5)\rightarrow(0.5\ 0.5\ 0.5)\rightarrow(0\ 0.5\ 0.5)\rightarrow(0\ 0\ 0.5)$



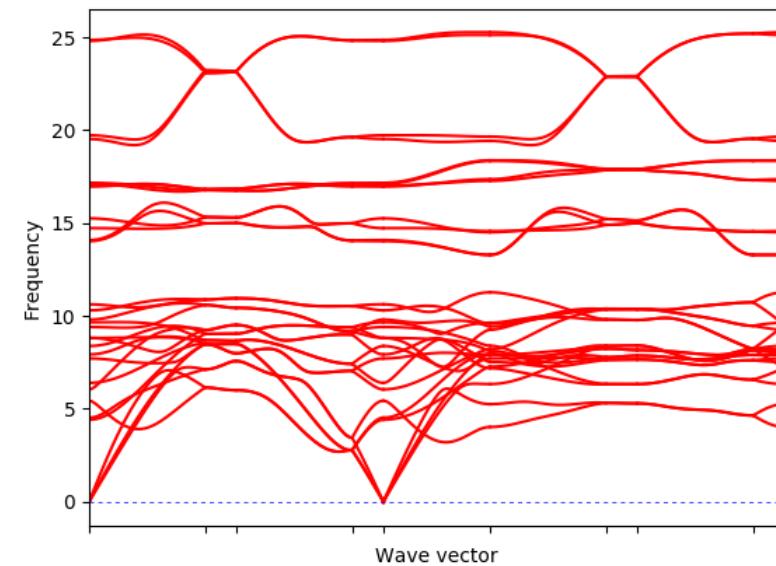
$\text{TiAlB}$



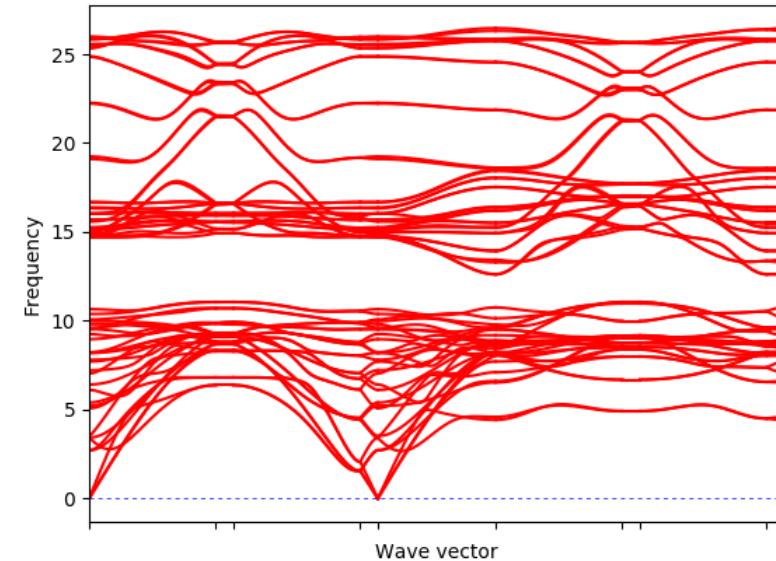
$\text{Ti}_3\text{AlB}_4$

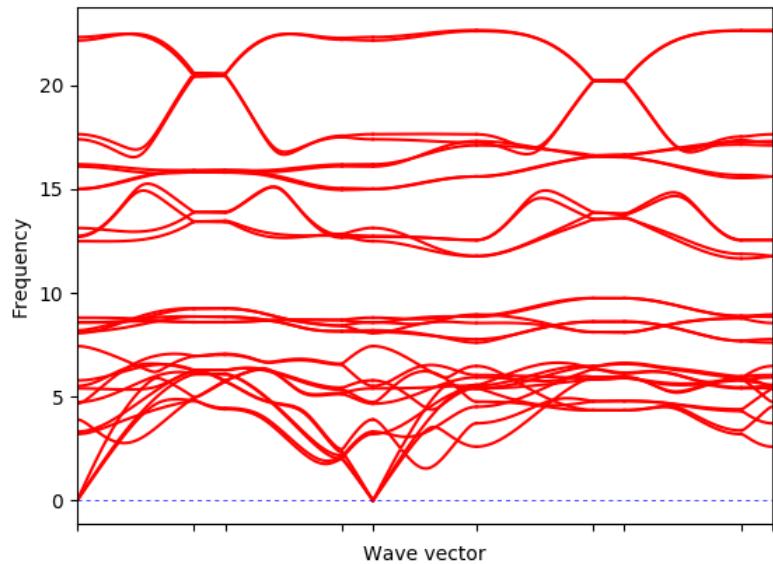
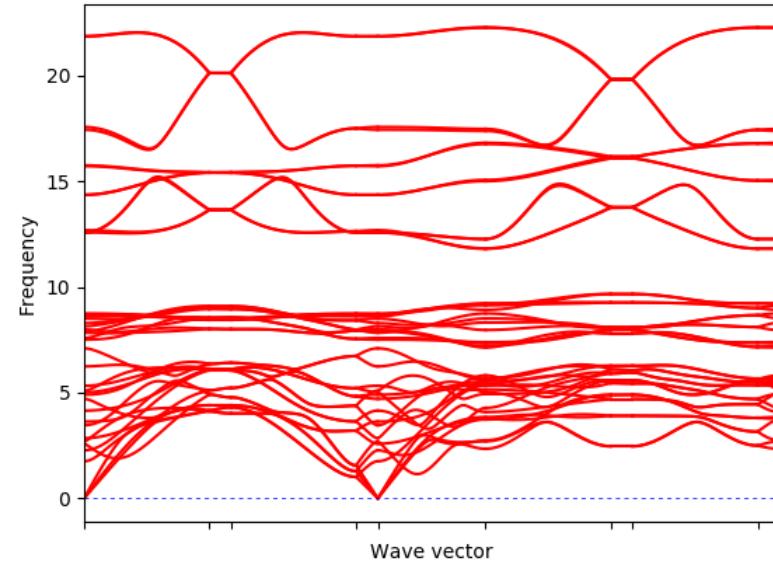
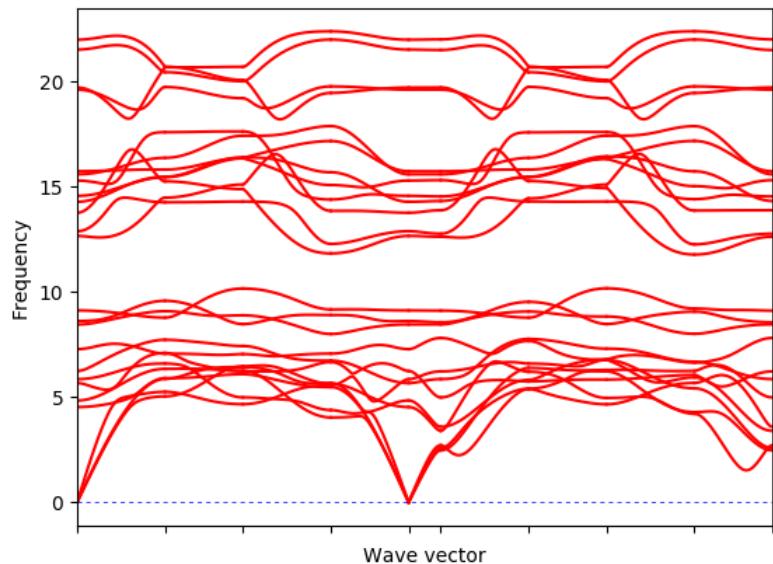
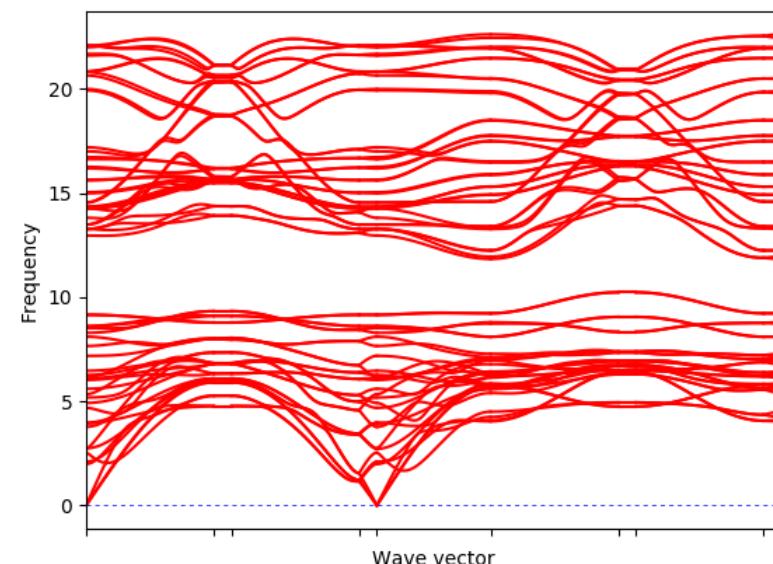


$\text{Ti}_2\text{AlB}_2$

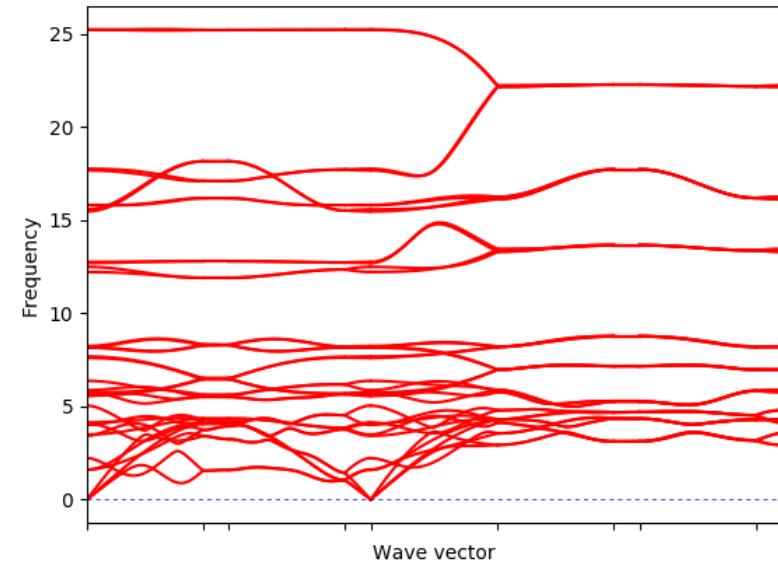


$\text{Ti}_4\text{AlB}_6$

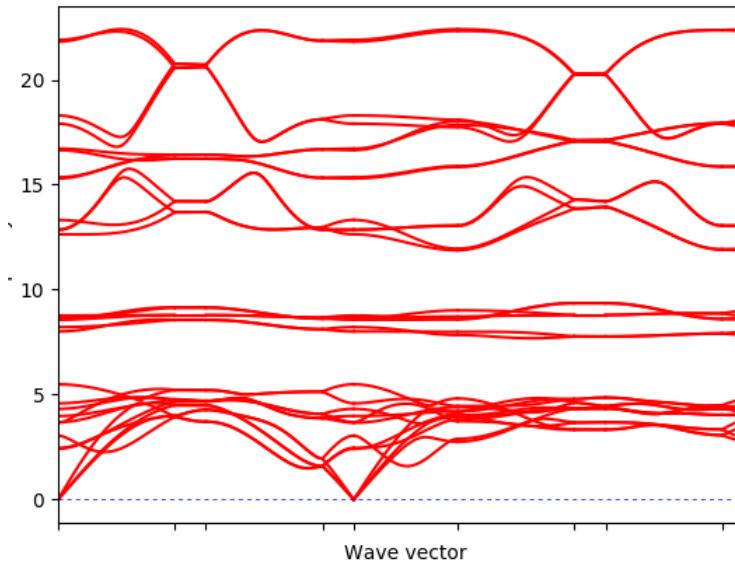


$Zr_2AlB_2$  $Zr_3Al_2B_2$  $Zr_3AlB_4$  $Zr_4AlB_6$ 

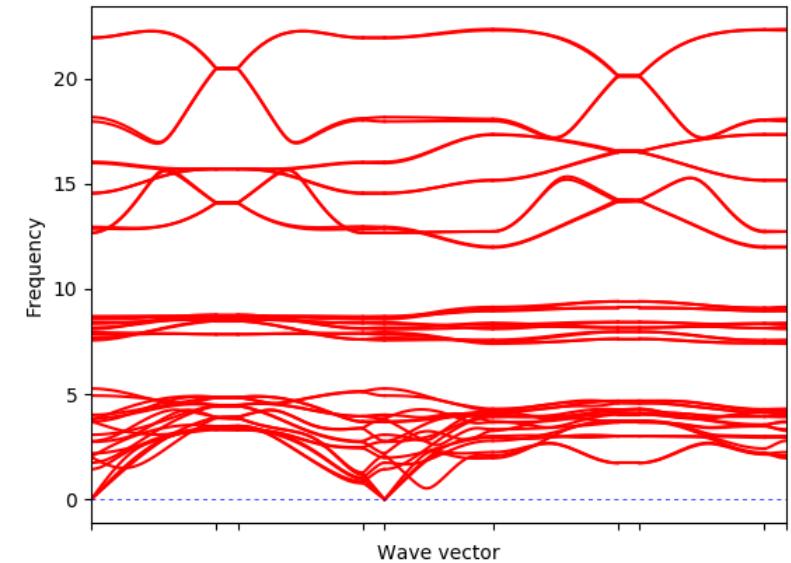
HfAlB



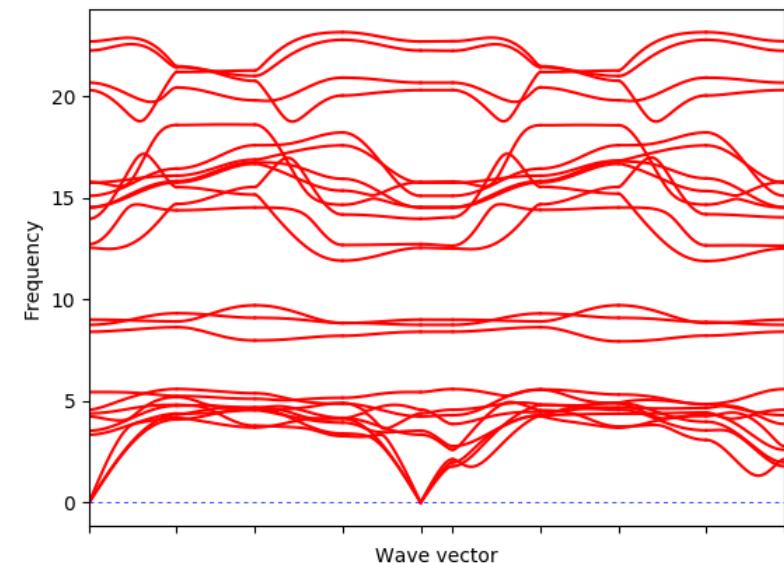
$\text{Hf}_2\text{AlB}_2$



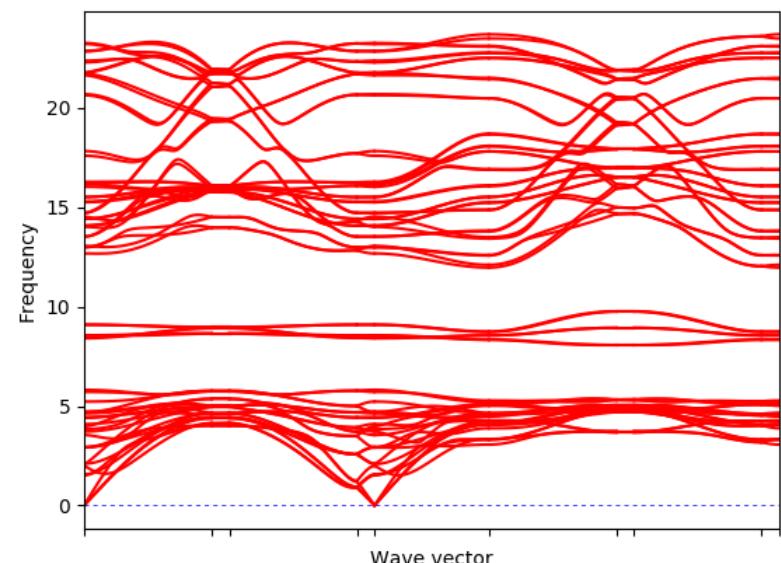
$\text{Hf}_3\text{Al}_2\text{B}_2$



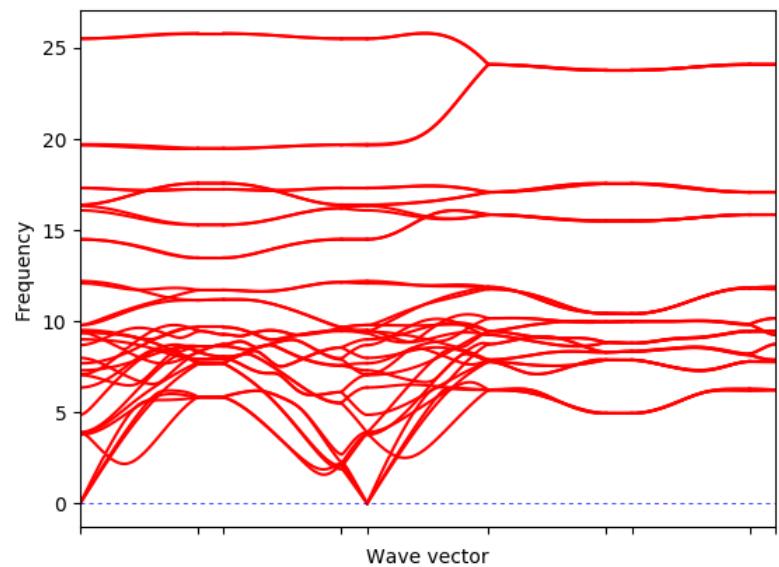
$\text{Hf}_3\text{AlB}_4$



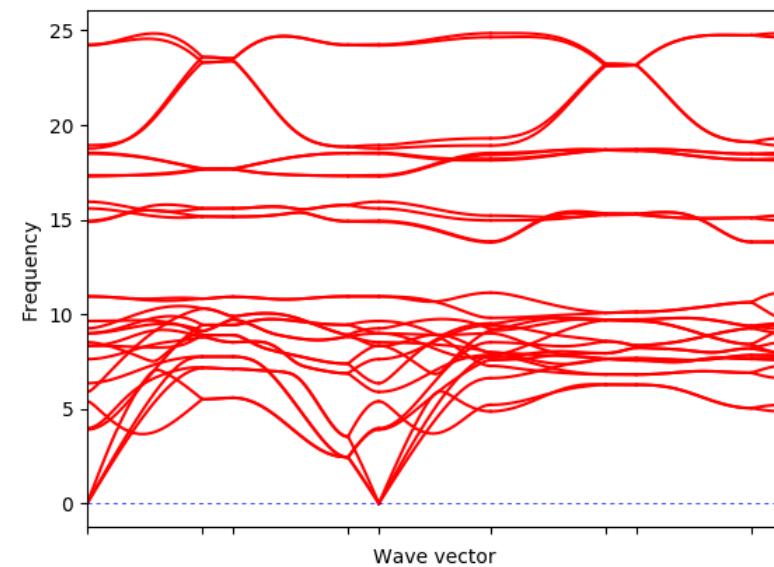
$\text{Hf}_4\text{AlB}_6$



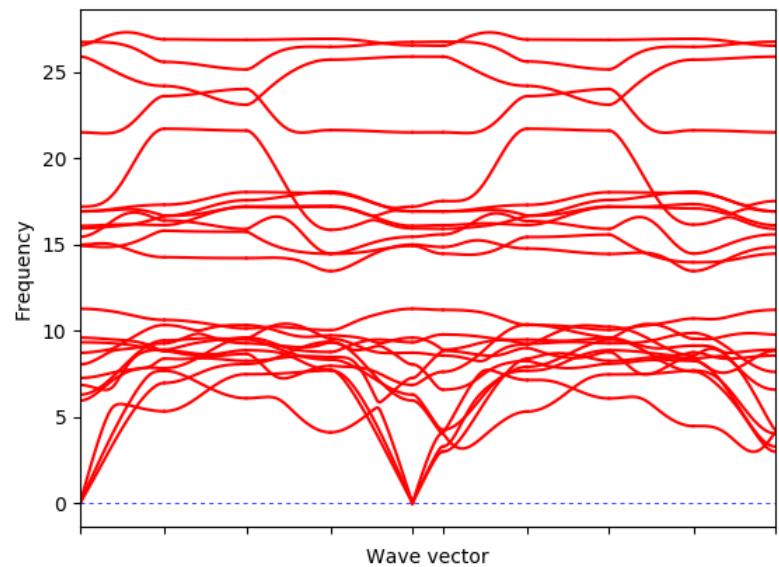
$VAlB$



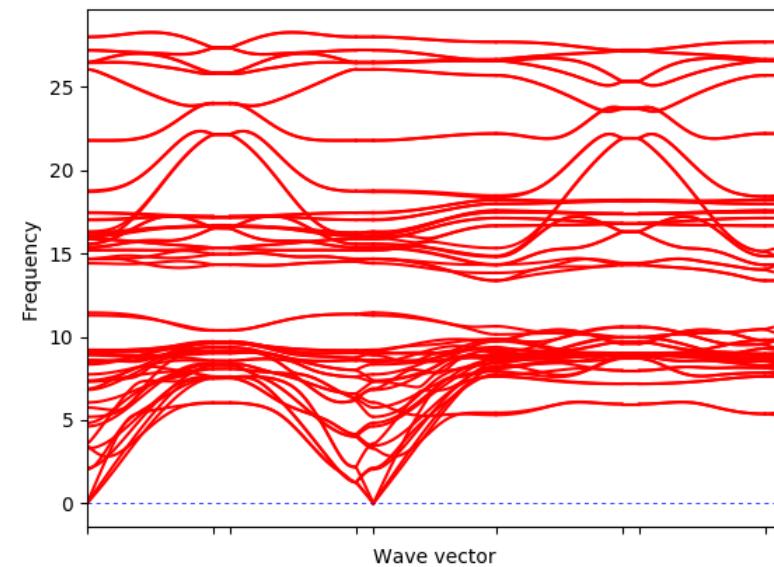
$V_2AlB_2$



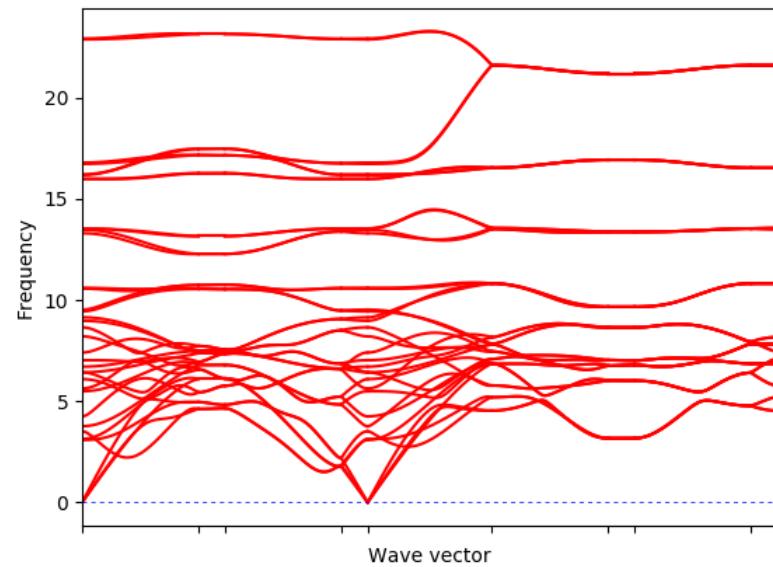
$V_3AlB_4$



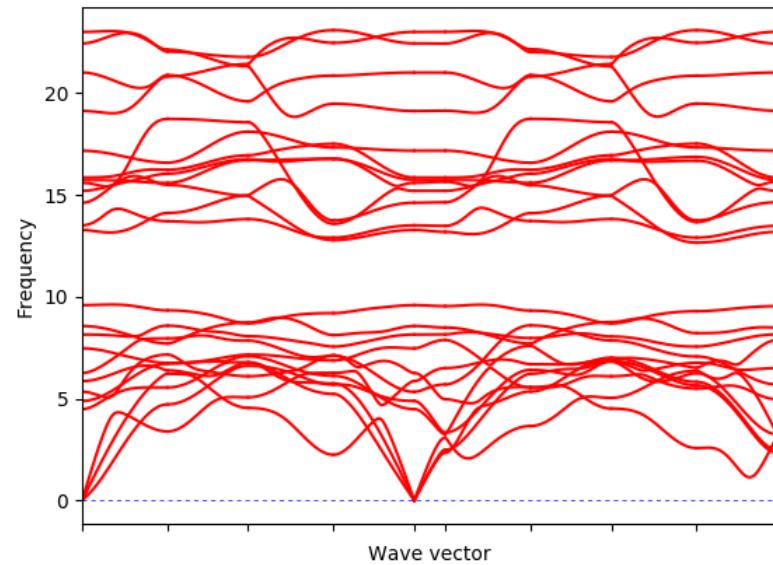
$V_4AlB_6$



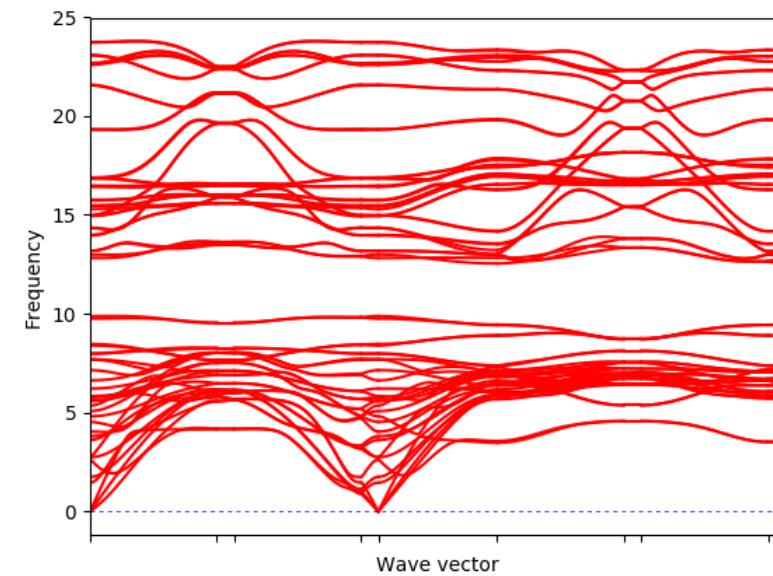
$\text{NbAlB}$



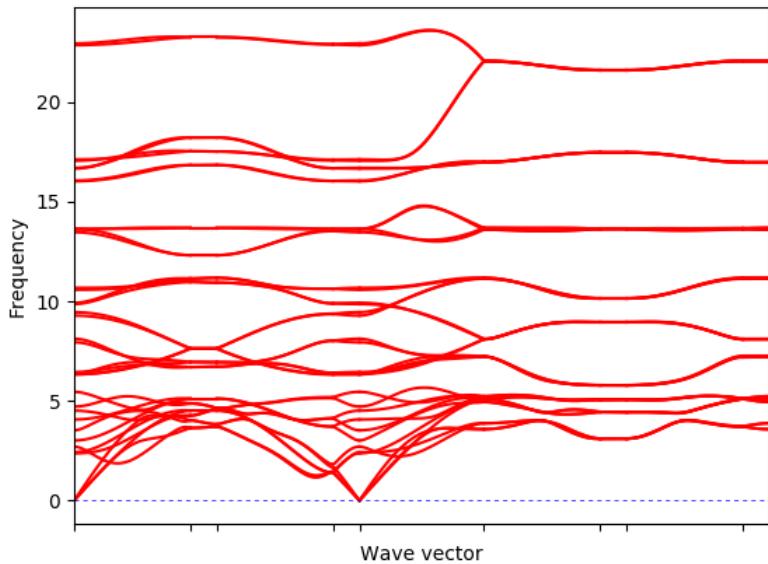
$\text{Nb}_3\text{AlB}_4$



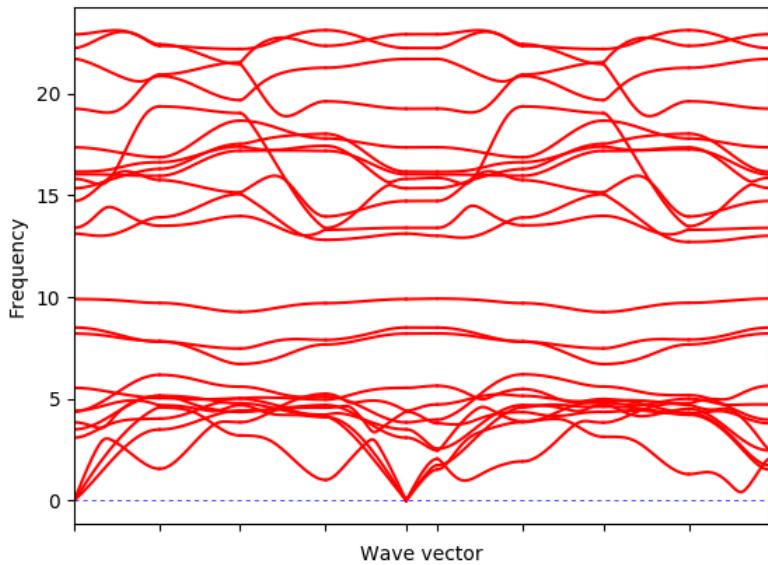
$\text{Nb}_4\text{AlB}_6$



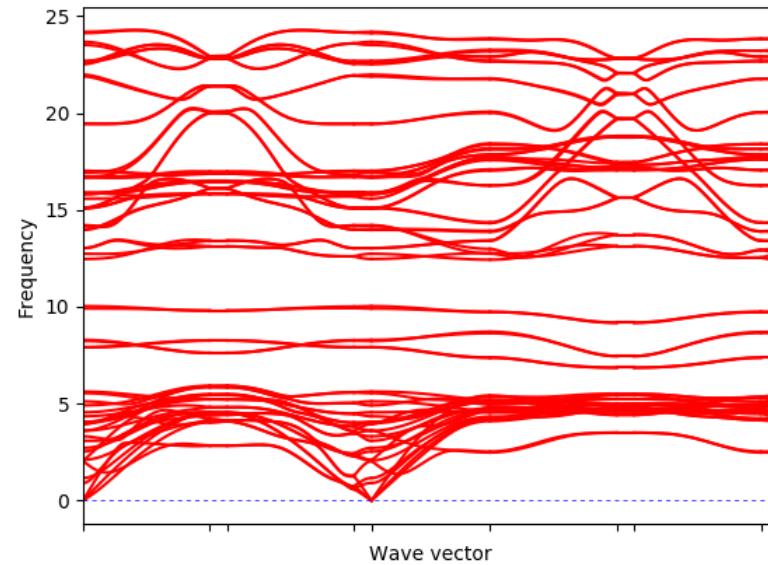
TaAlB



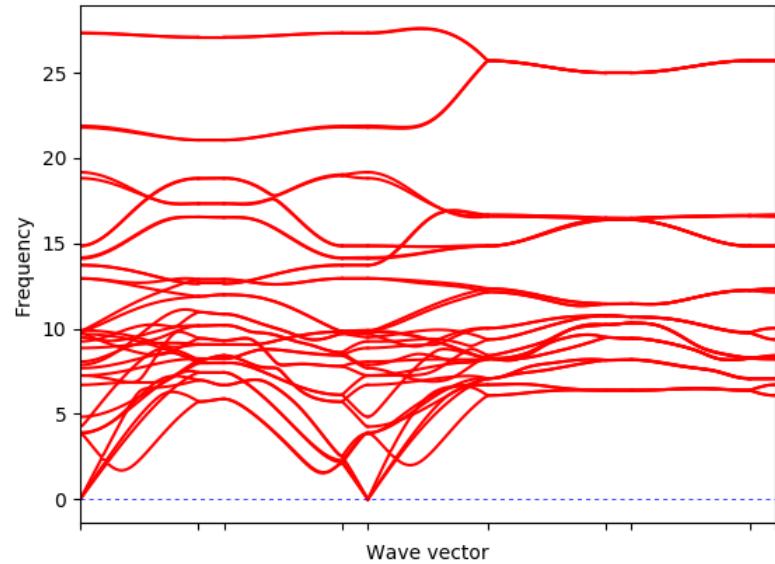
Ta<sub>3</sub>AlB<sub>4</sub>



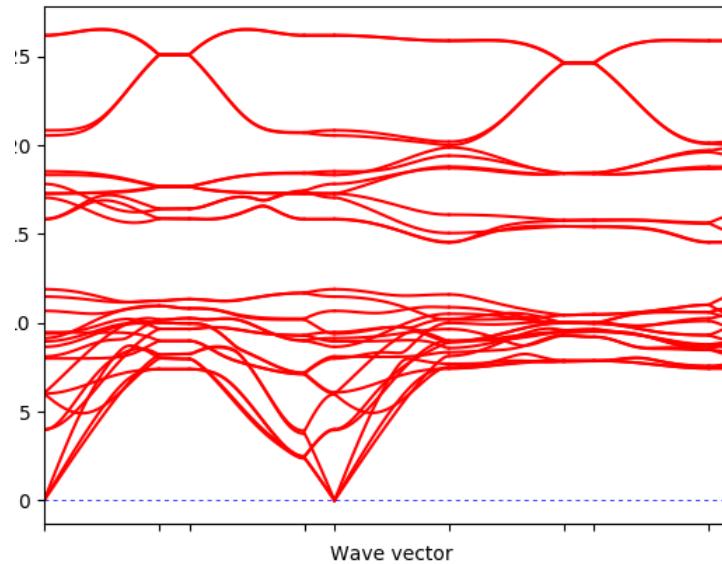
Ta<sub>4</sub>AlB<sub>6</sub>



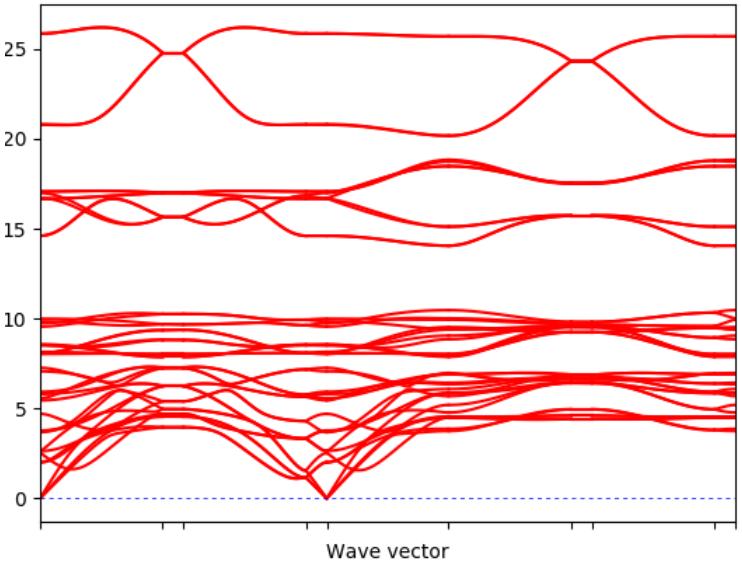
$\text{CrAlB}$



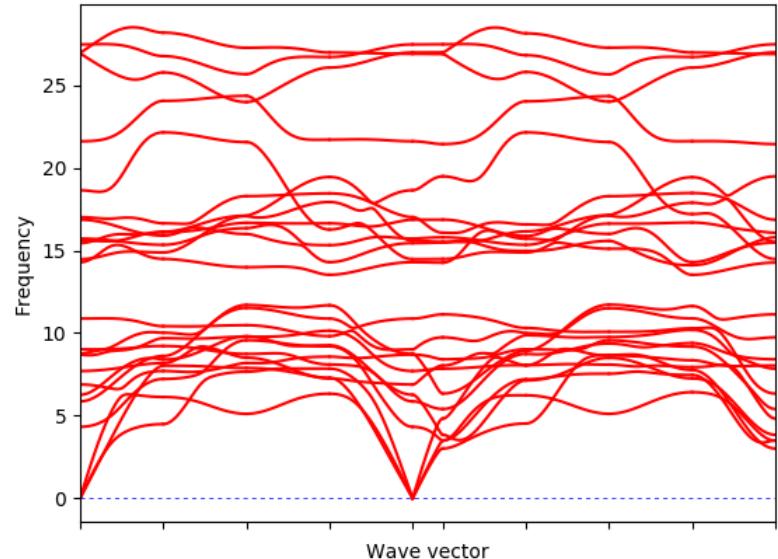
$\text{Cr}_2\text{AlB}_2$



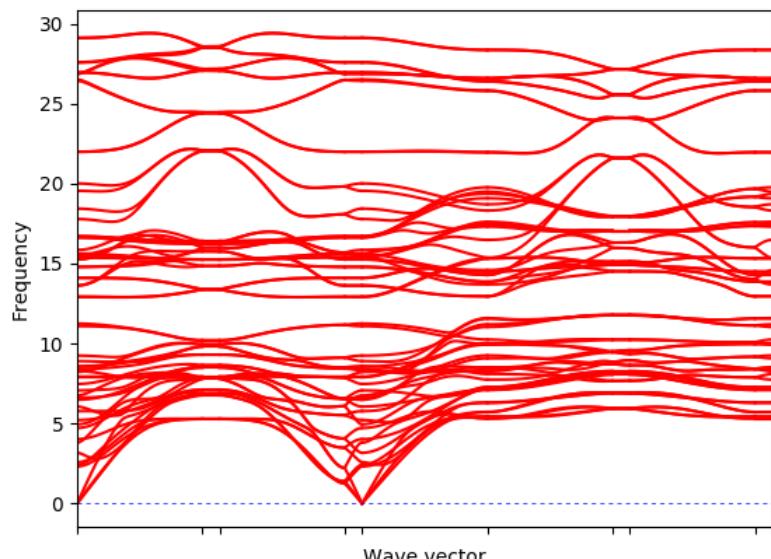
$\text{Cr}_3\text{Al}_2\text{B}_2$



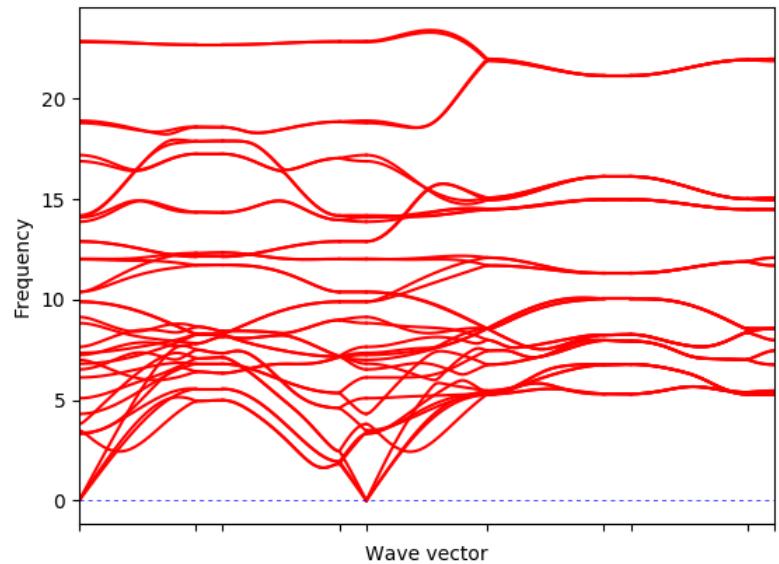
$\text{Cr}_3\text{AlB}_4$



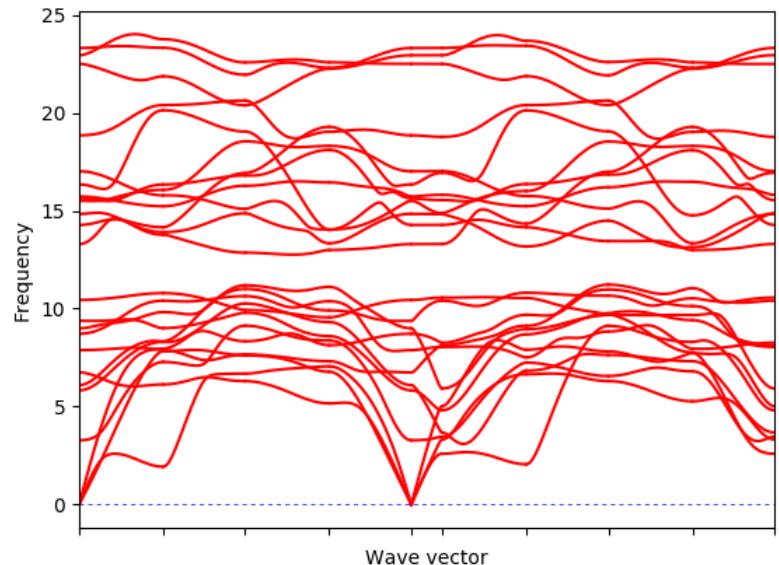
$\text{Cr}_4\text{AlB}_6$



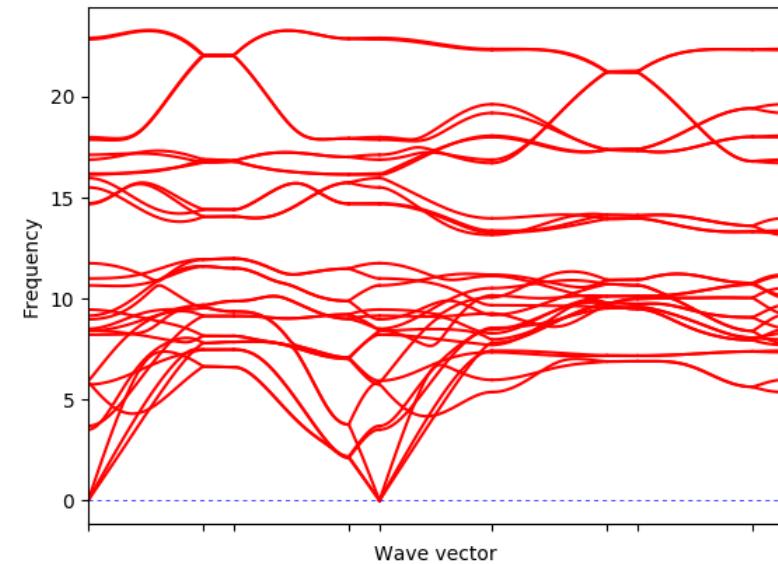
MoAlB



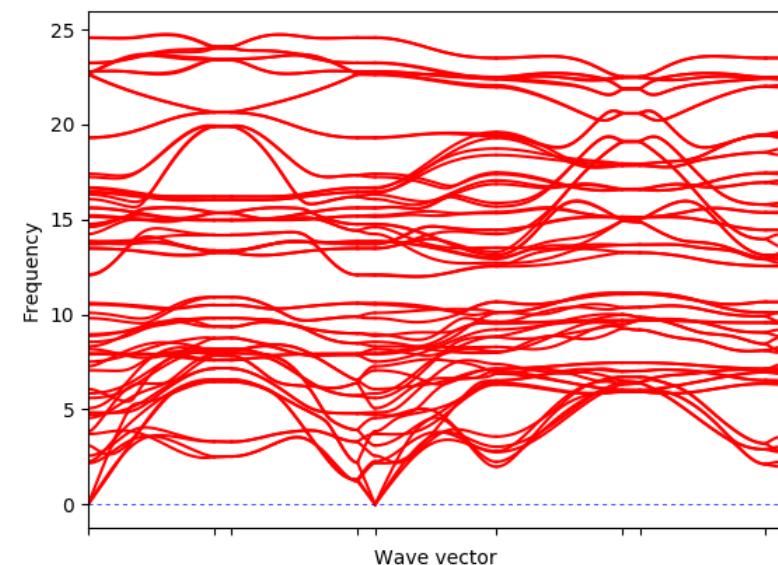
Mo<sub>3</sub>AlB<sub>6</sub>



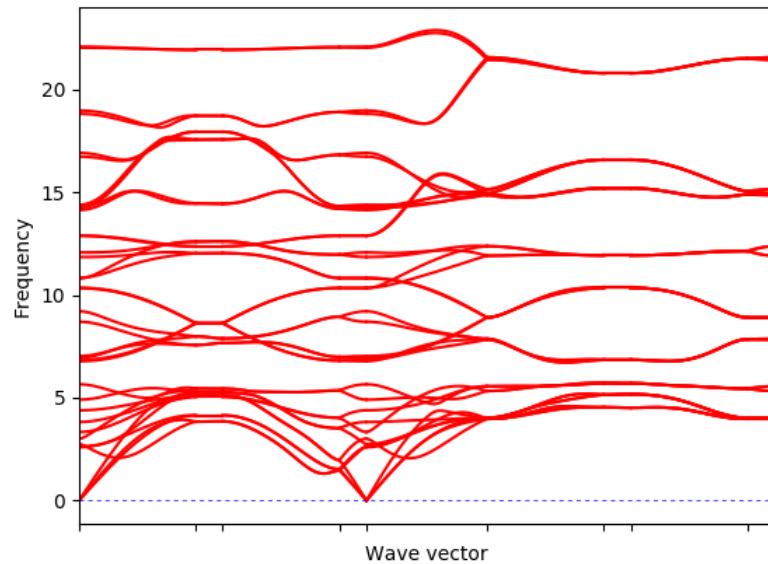
Mo<sub>2</sub>AlB<sub>2</sub>



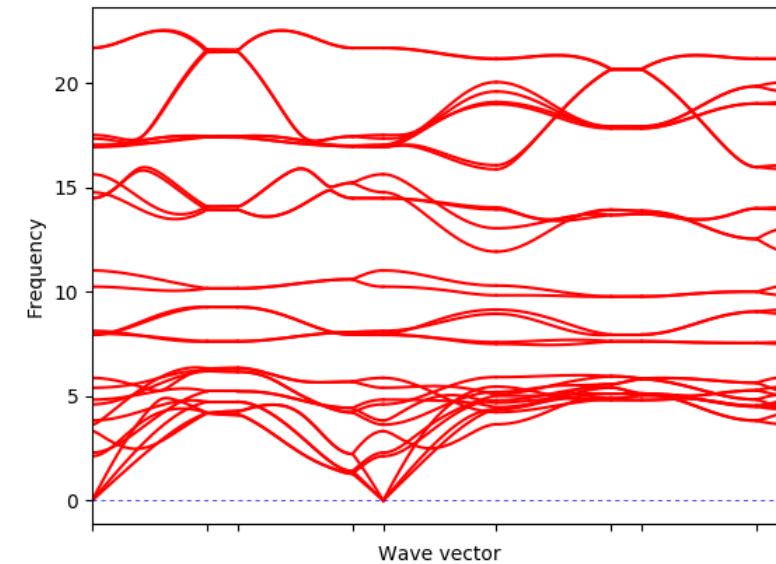
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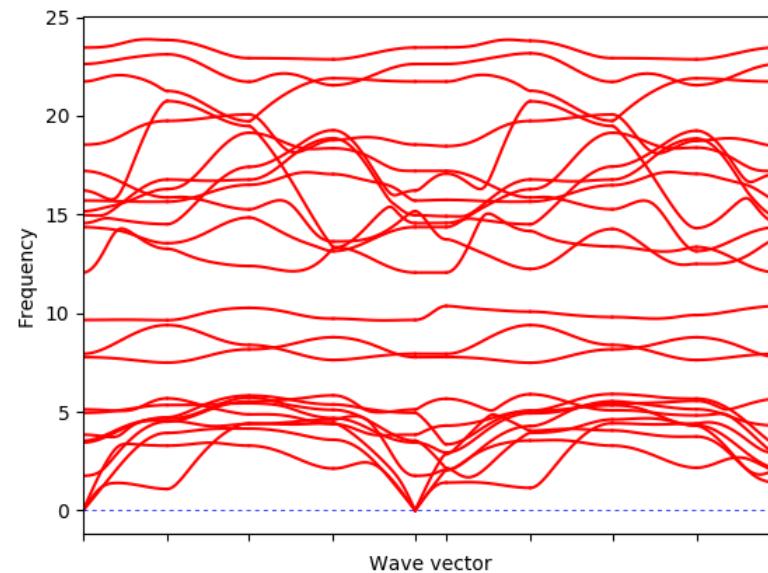
WAlB



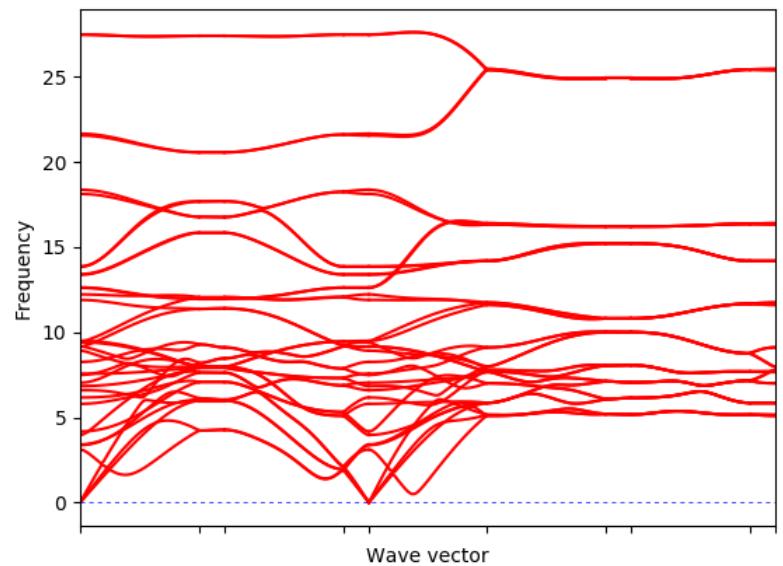
$W_2AlB_2$



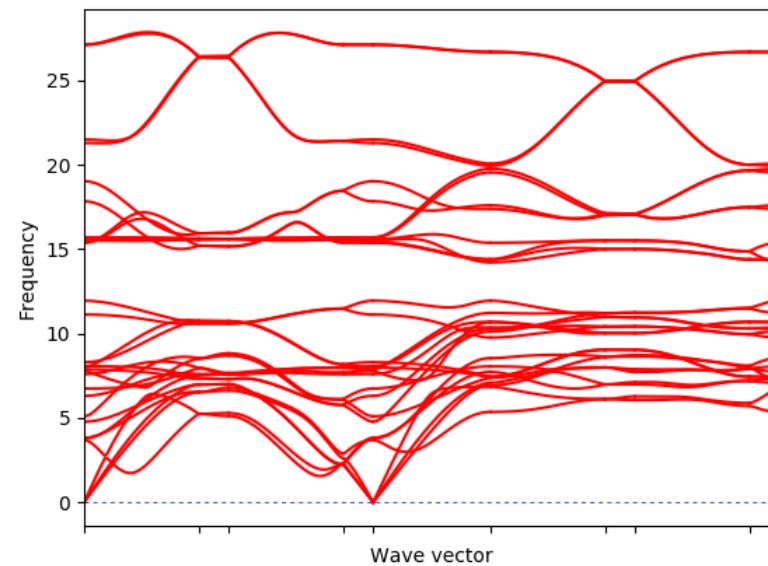
$W_3AlB_4$



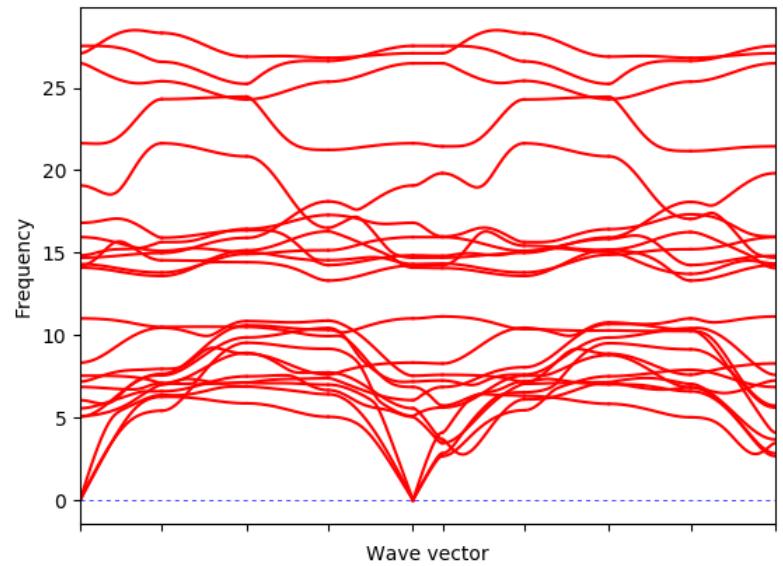
$\text{MnAlB}$



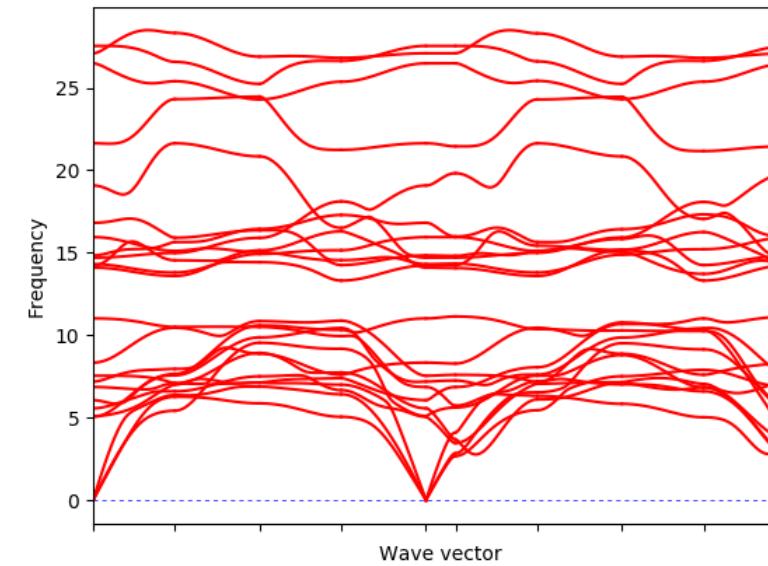
$\text{Mn}_2\text{AlB}_2$



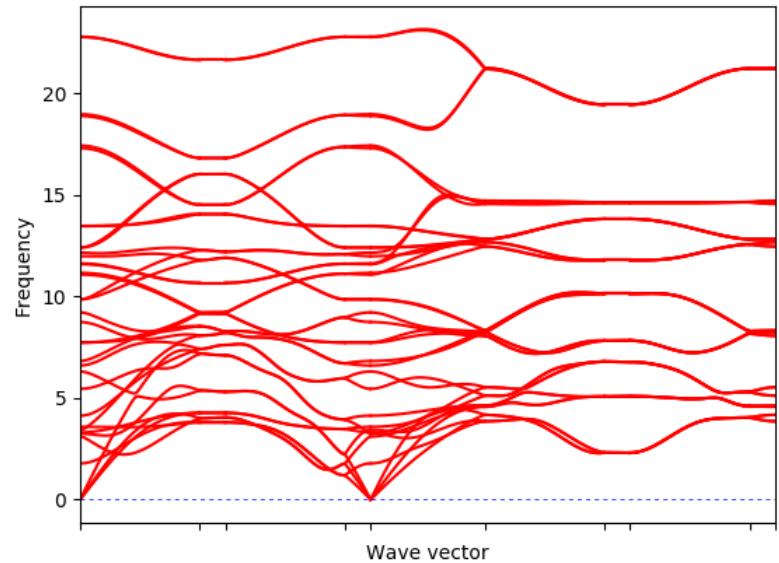
$\text{Mn}_3\text{Al}_2\text{B}_2$



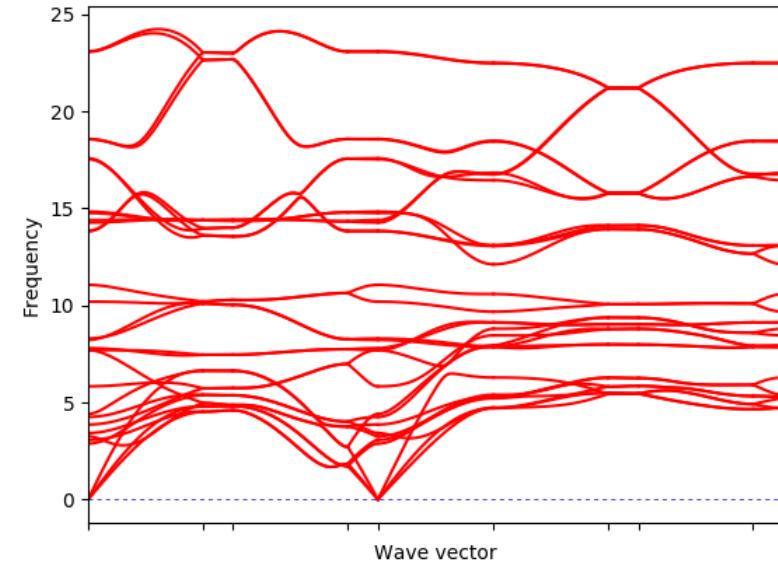
$\text{Mn}_3\text{AlB}_4$



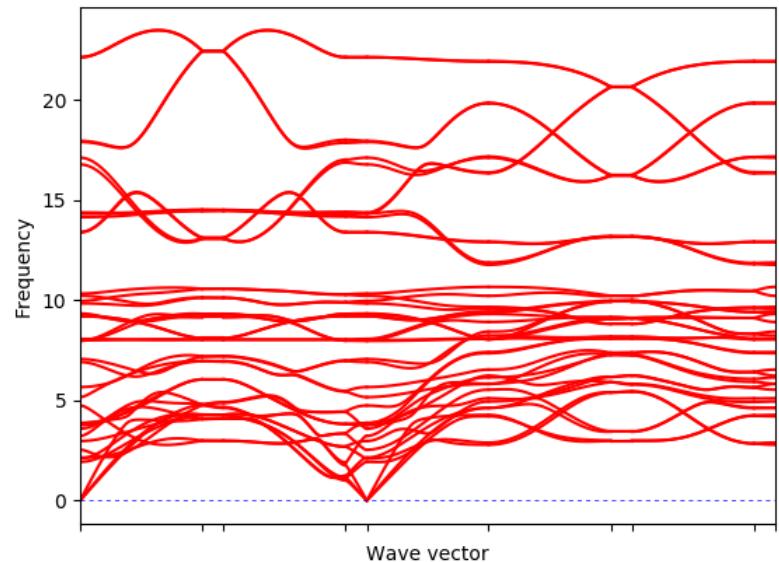
TcAlB



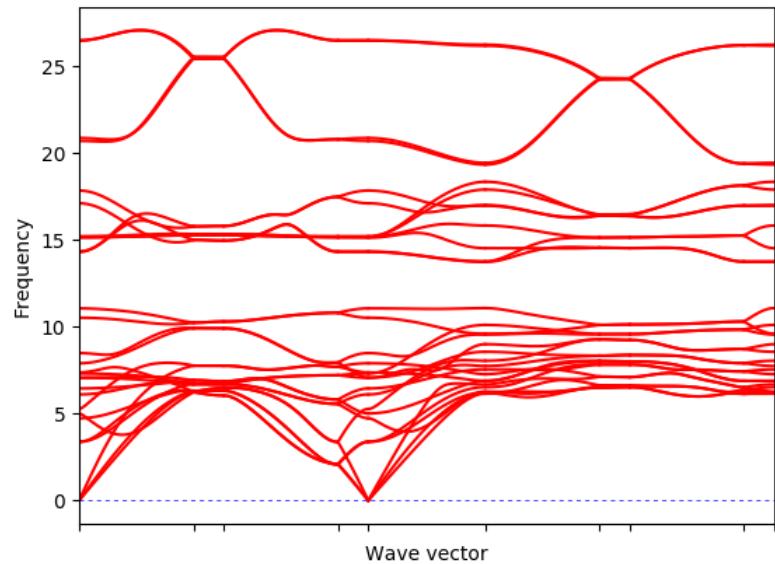
Tc<sub>2</sub>AlB<sub>2</sub>



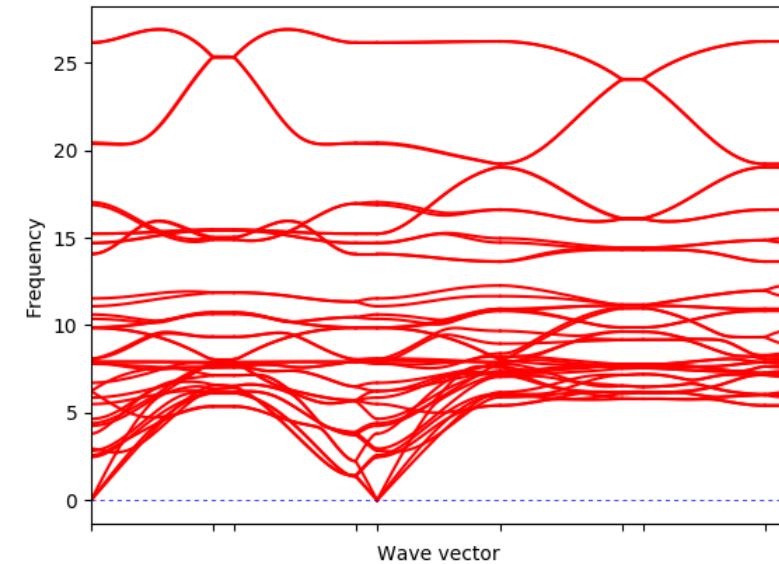
Tc<sub>3</sub>Al<sub>2</sub>B<sub>2</sub>



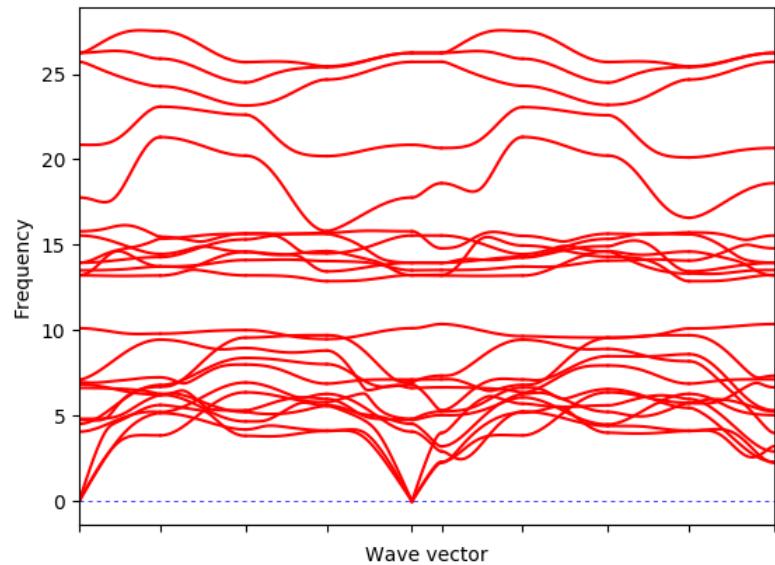
$\text{Fe}_2\text{AlB}_2$



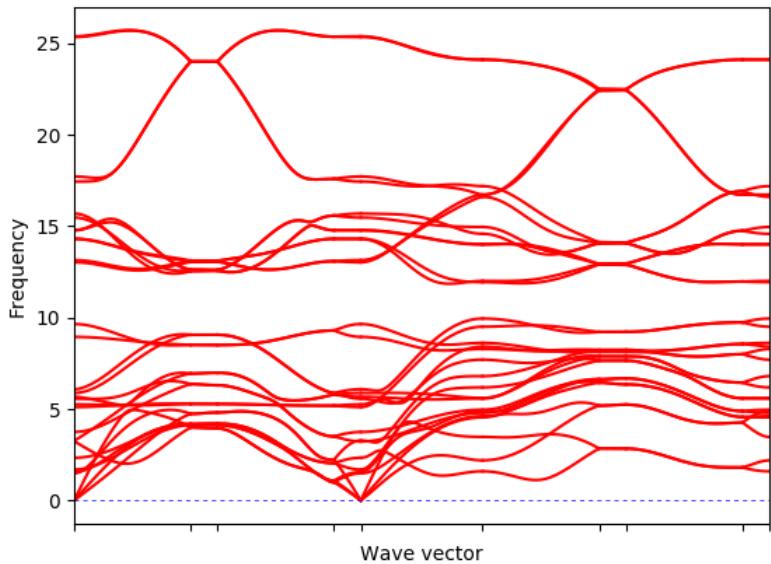
$\text{Fe}_3\text{Al}_2\text{B}_2$



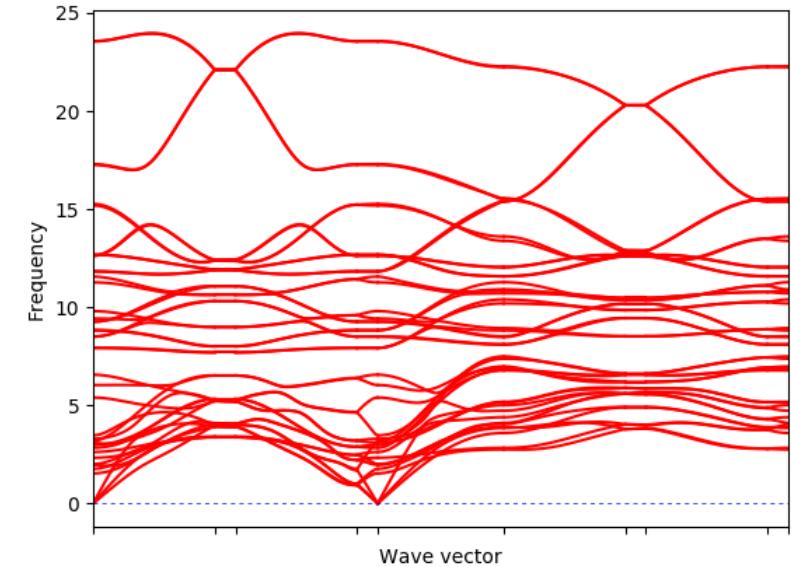
$\text{Fe}_3\text{AlB}_4$



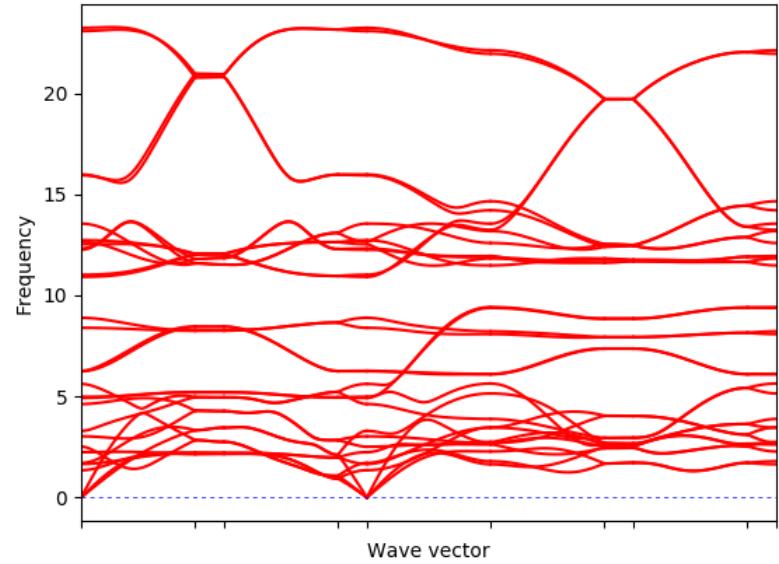
$\text{Ru}_2\text{AlB}_2$



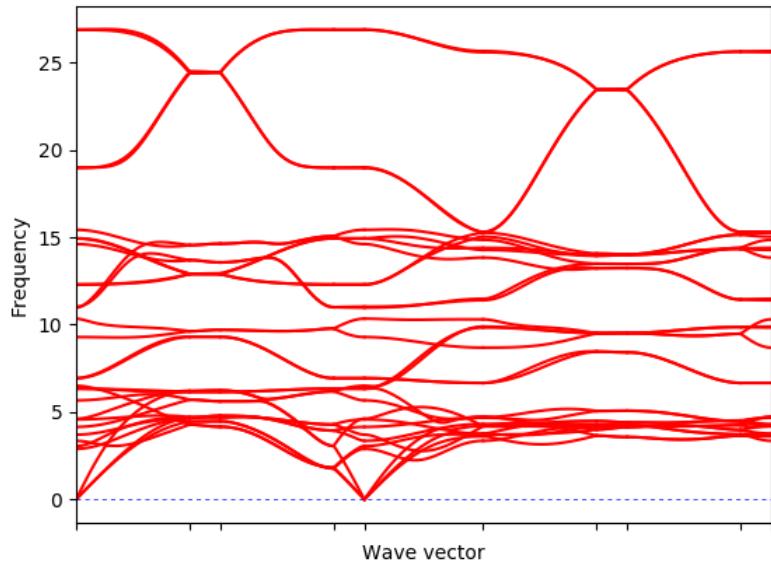
$\text{Ru}_3\text{Al}_2\text{B}_2$



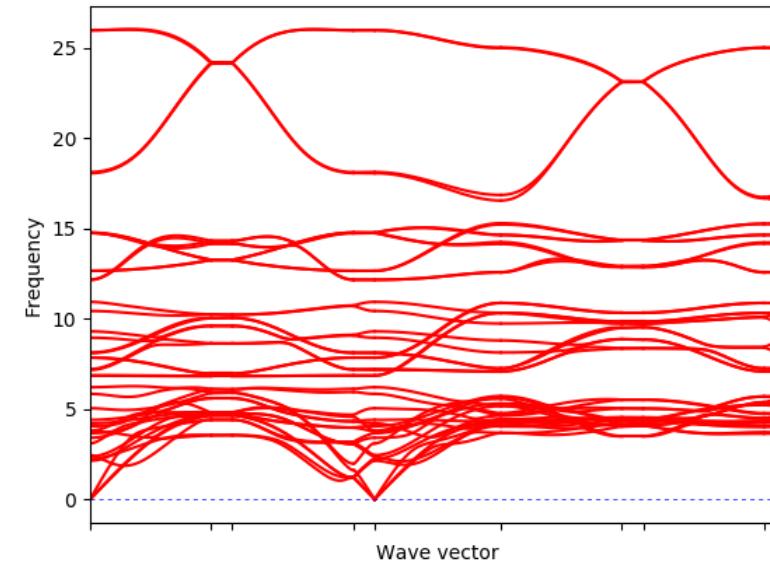
$\text{Rh}_2\text{AlB}_2$

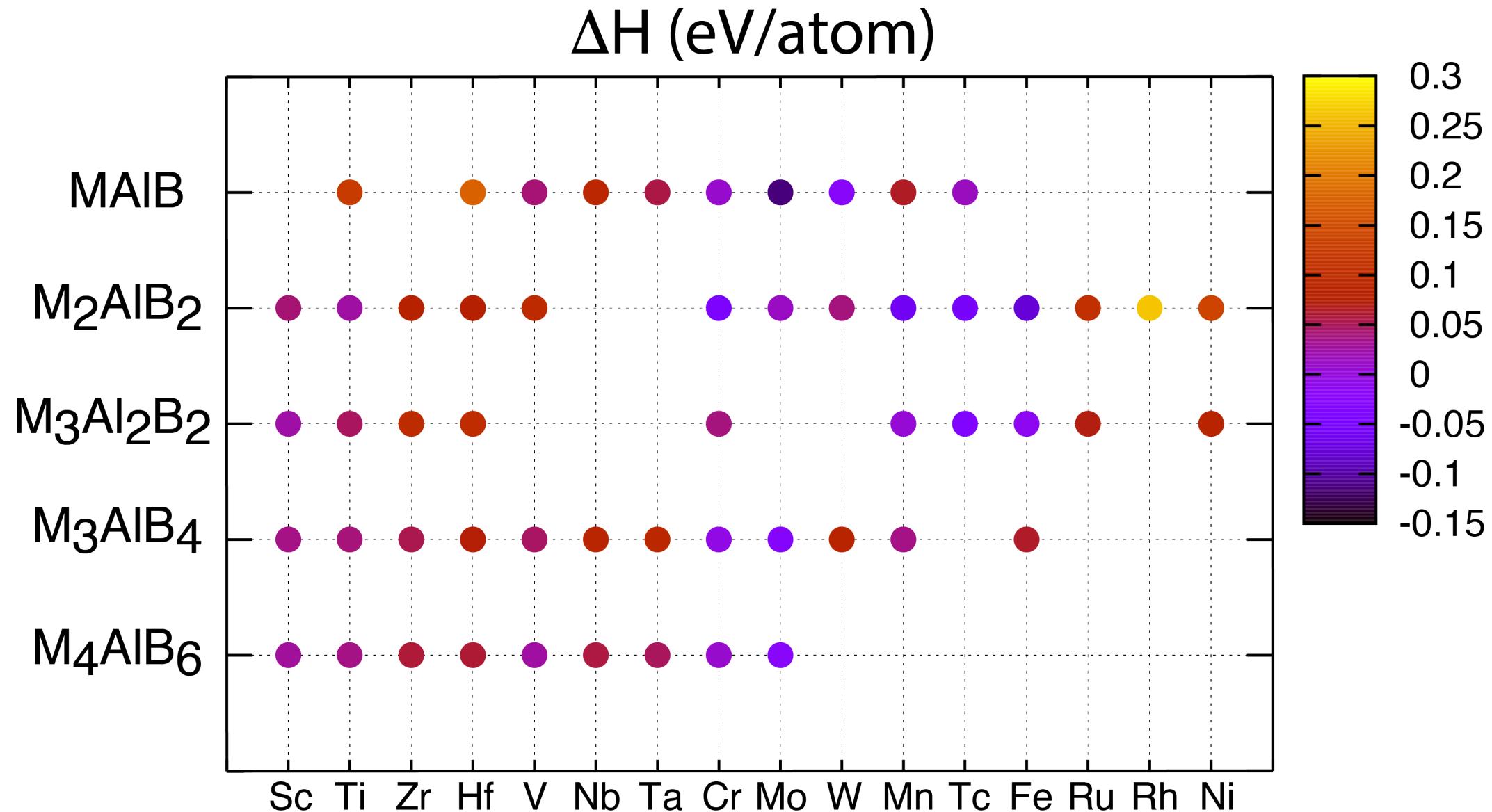


$\text{Ni}_2\text{AlB}_2$



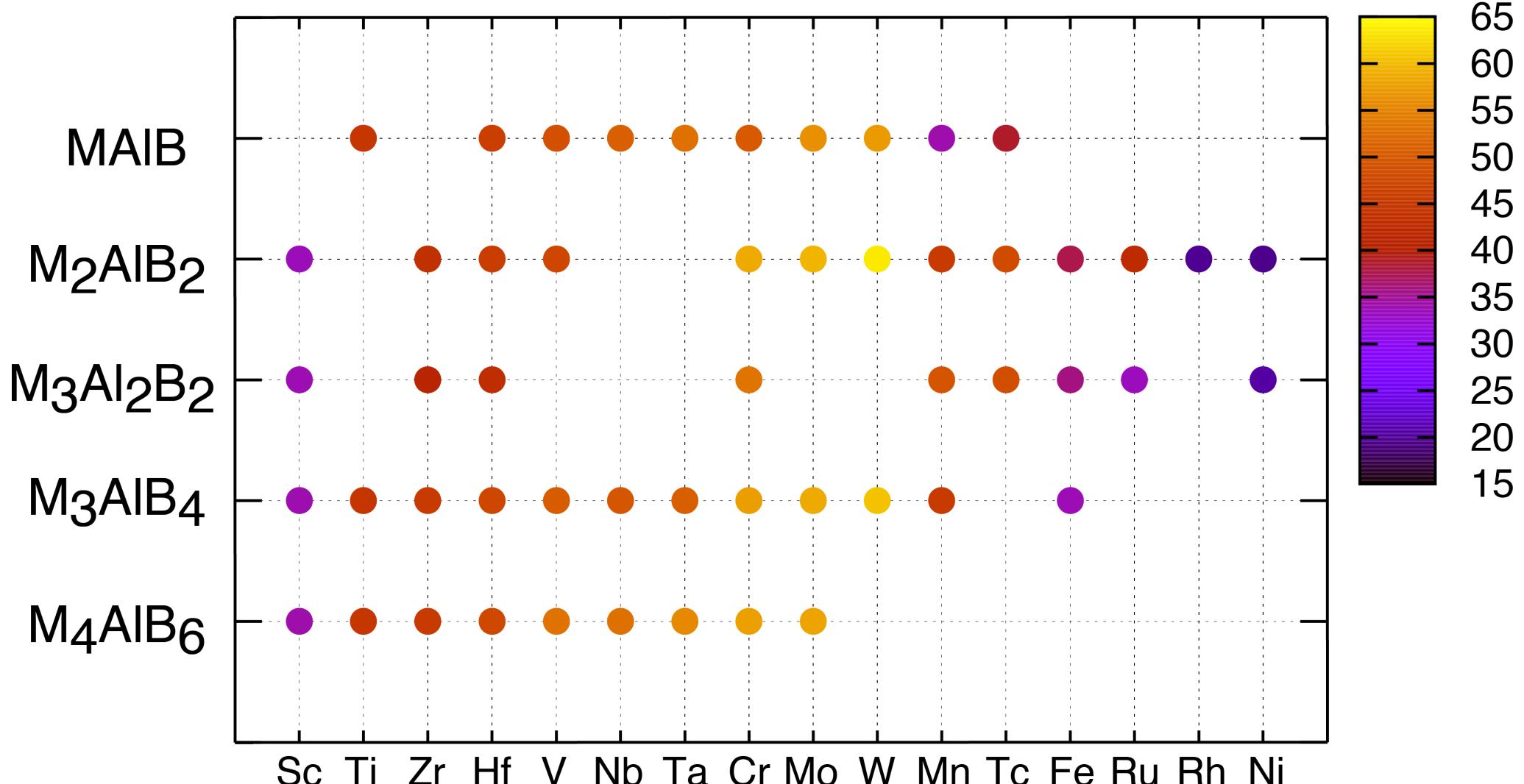
$\text{Ni}_3\text{Al}_2\text{B}_2$





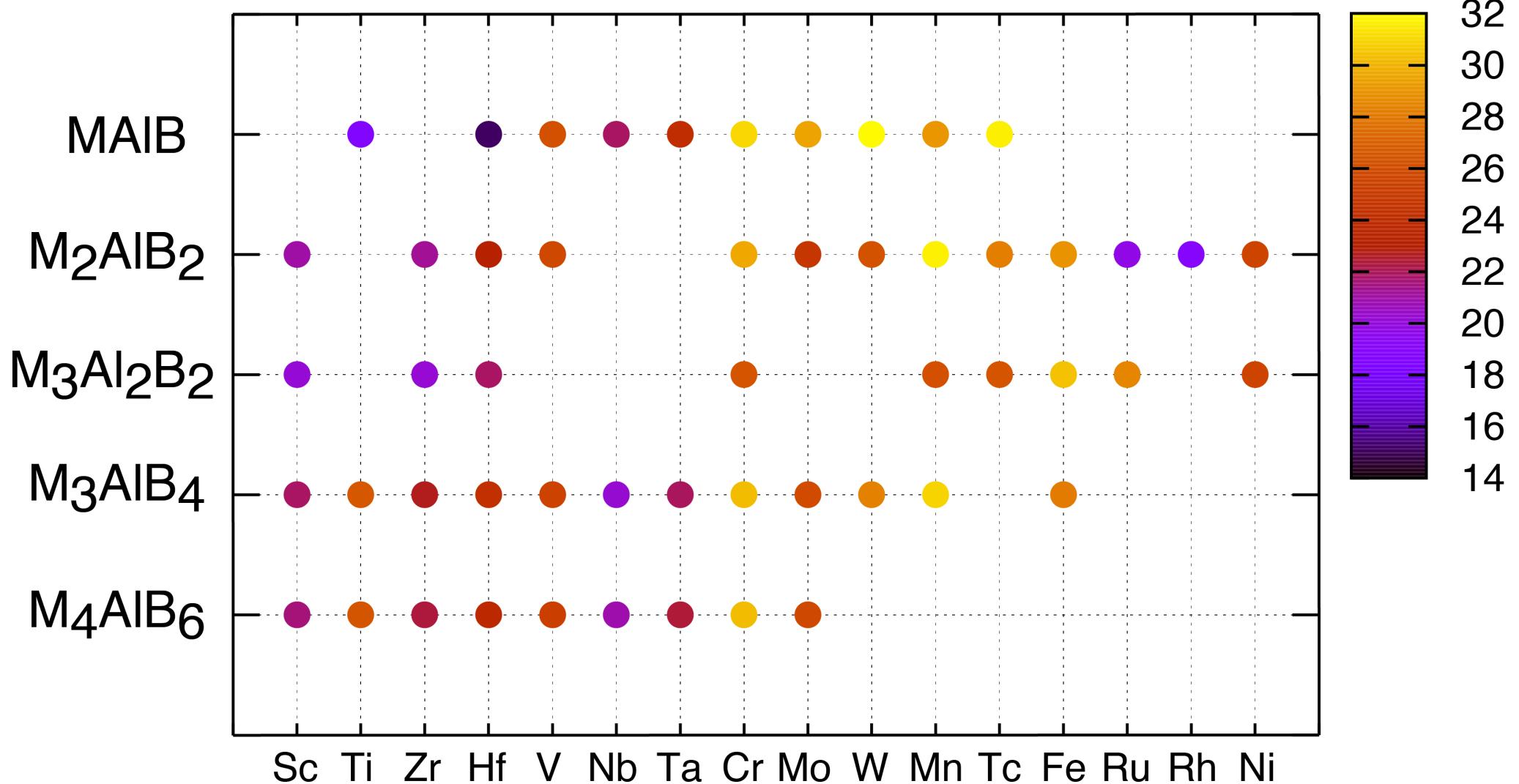
The instability of various MAB phases with respect to the type of transition metal.

$FC_M$  (eVÅ $^{-2}$ )



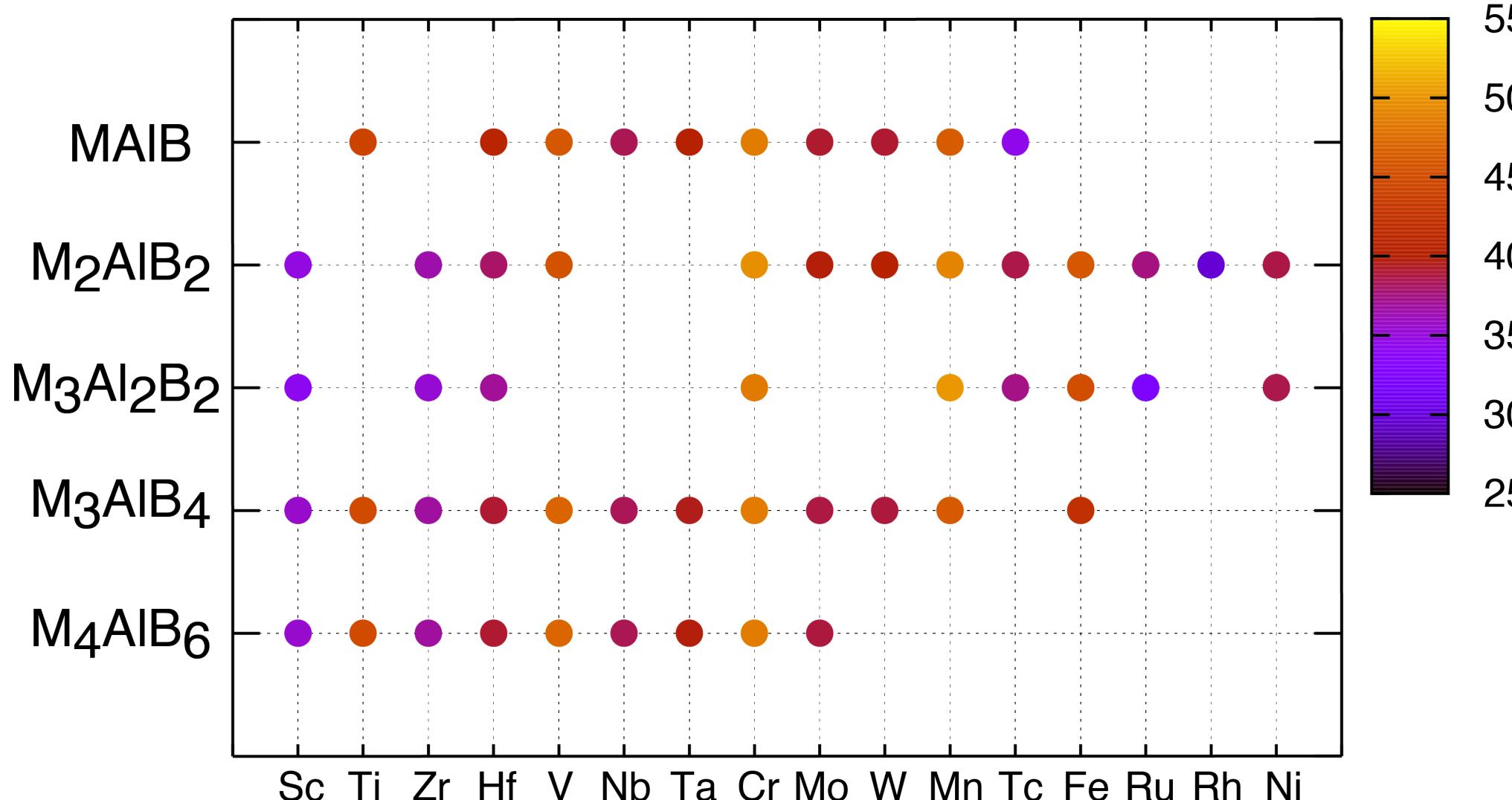
The summation of force constants of all springs connected to an M atom in MAB phases with respect to the type of transition metal.

$F_{\text{CAI}} (\text{eV}\text{\AA}^{-2})$

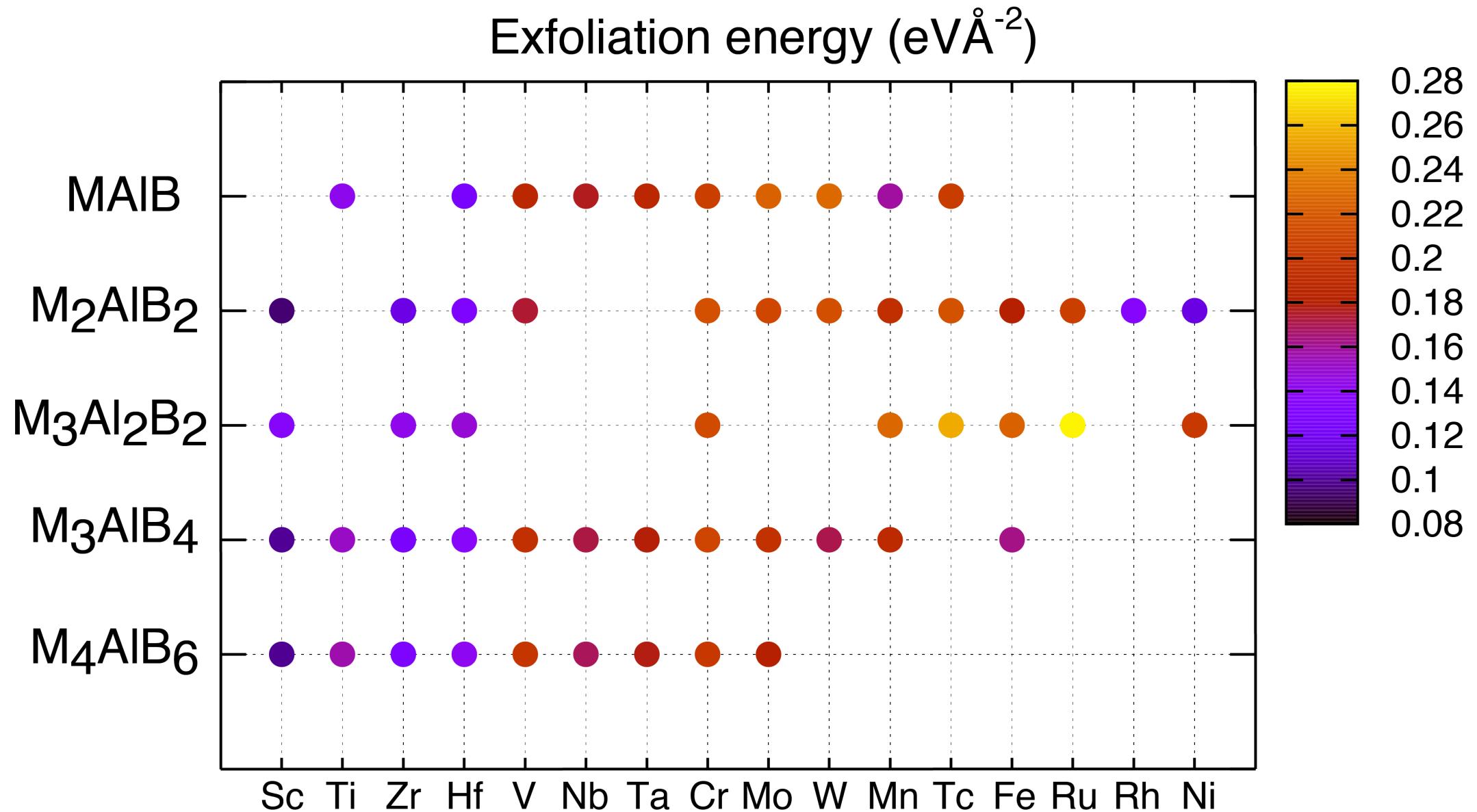


The summation of force constants of all springs connected  
to an Al atom in MAB phases with respect to the type of transition metal.

$\text{FC}_\text{B}$  (eV $\text{\AA}^{-2}$ )

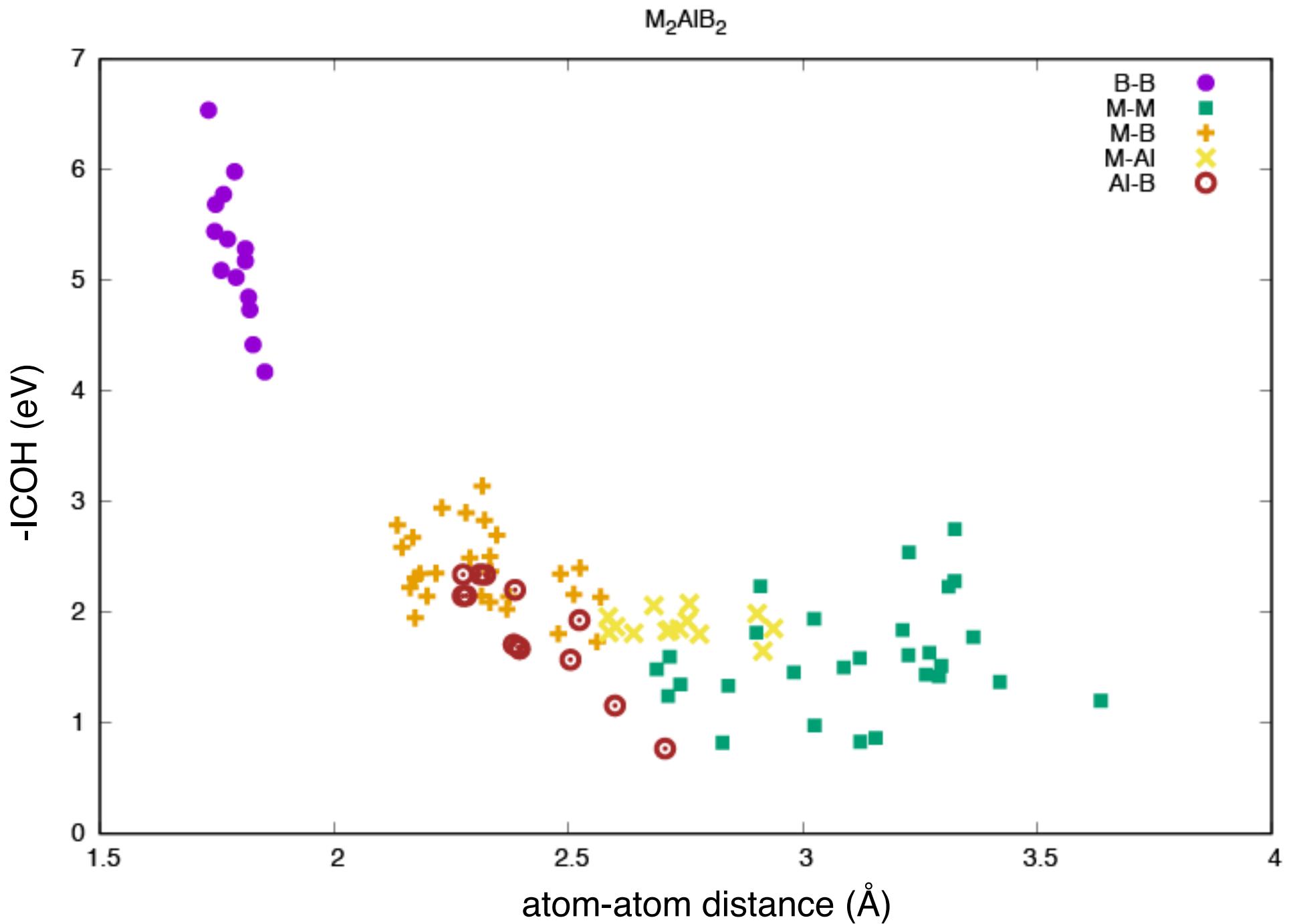


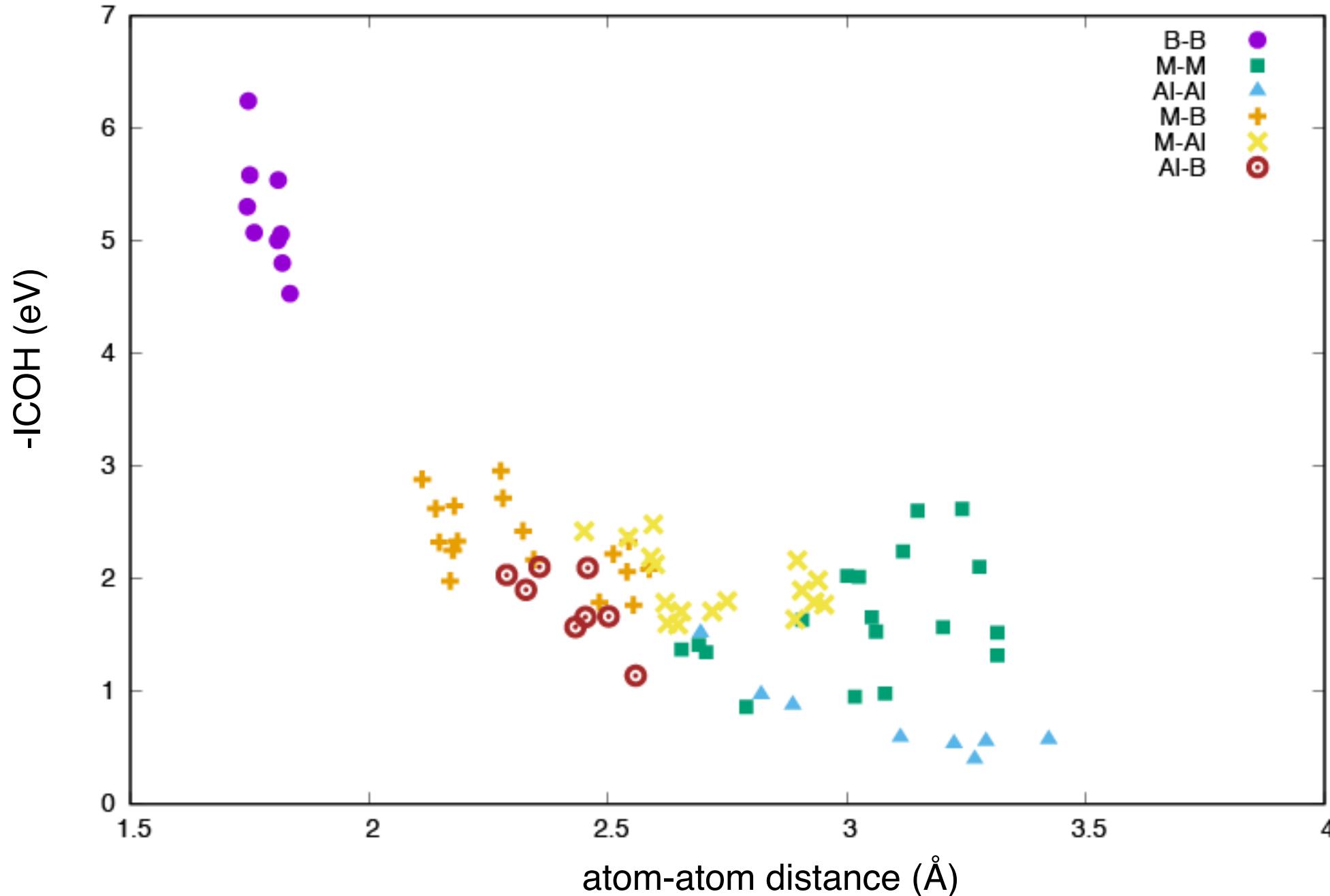
The summation of force constants of all springs connected  
to a B atom in MAB phases with respect to the type of transition metal.

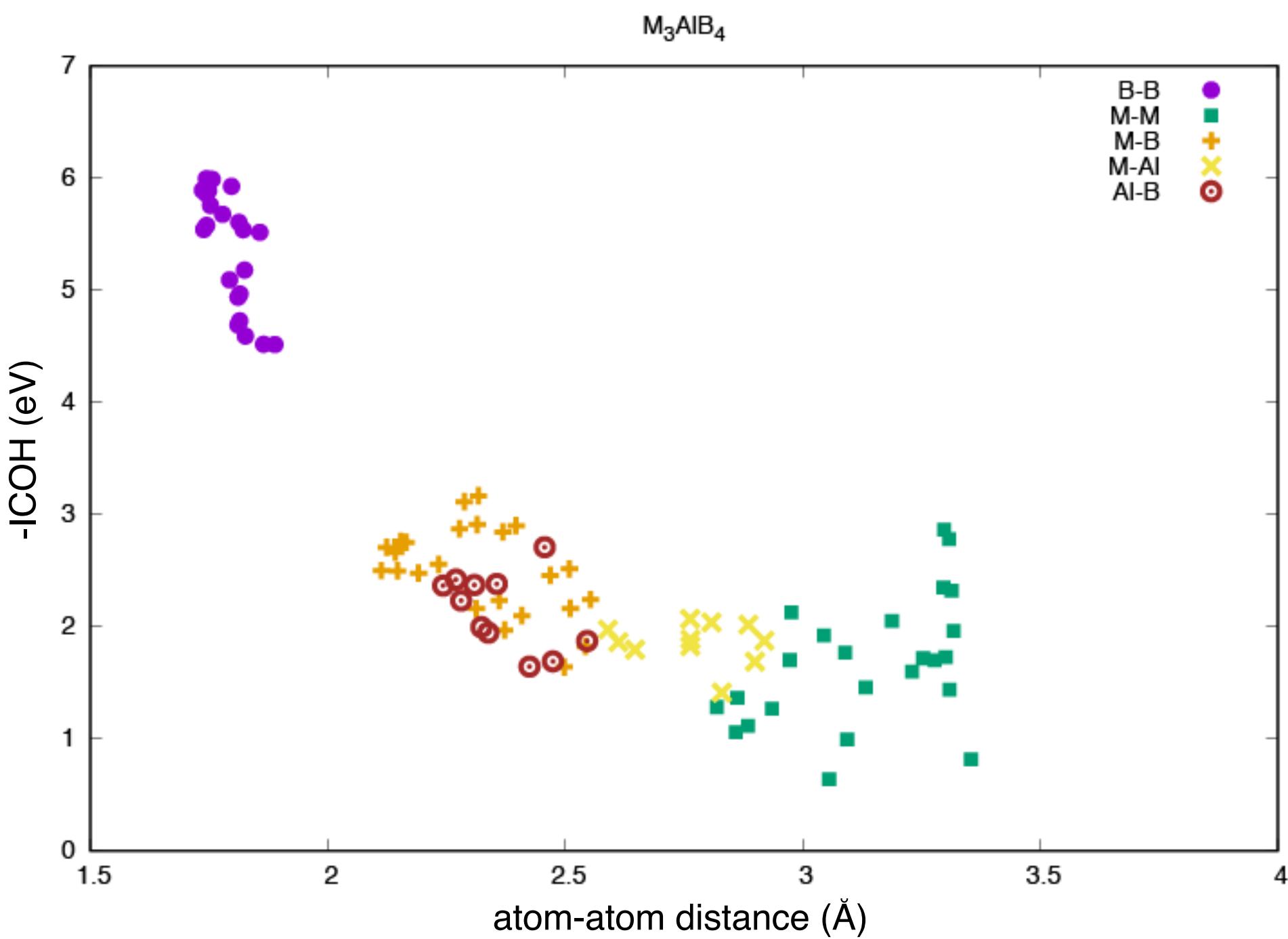


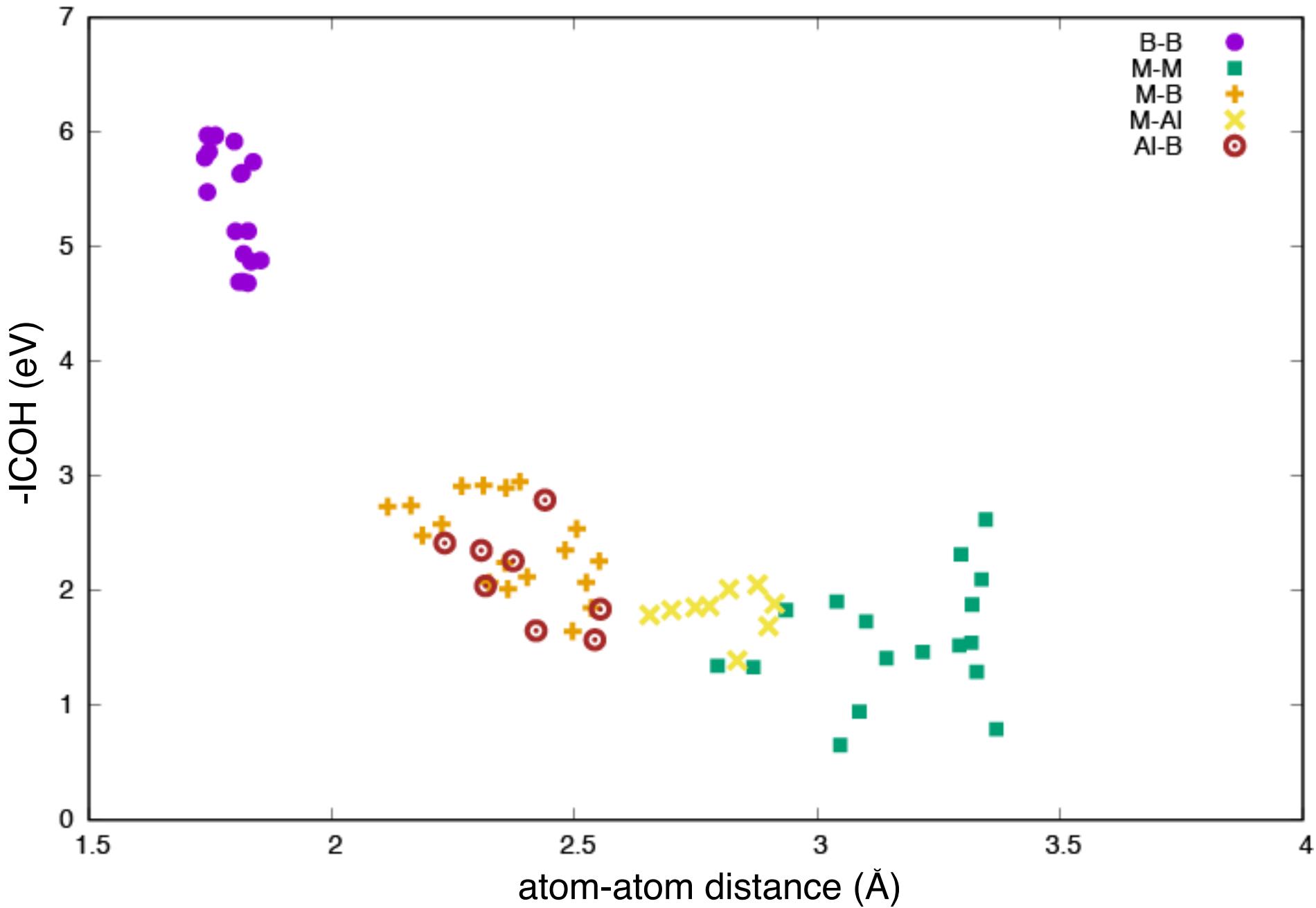
Exfoliation energies of MAB phases with respect to the type of transition metal.

The data in Figure 3(a) are presented for each phase separately

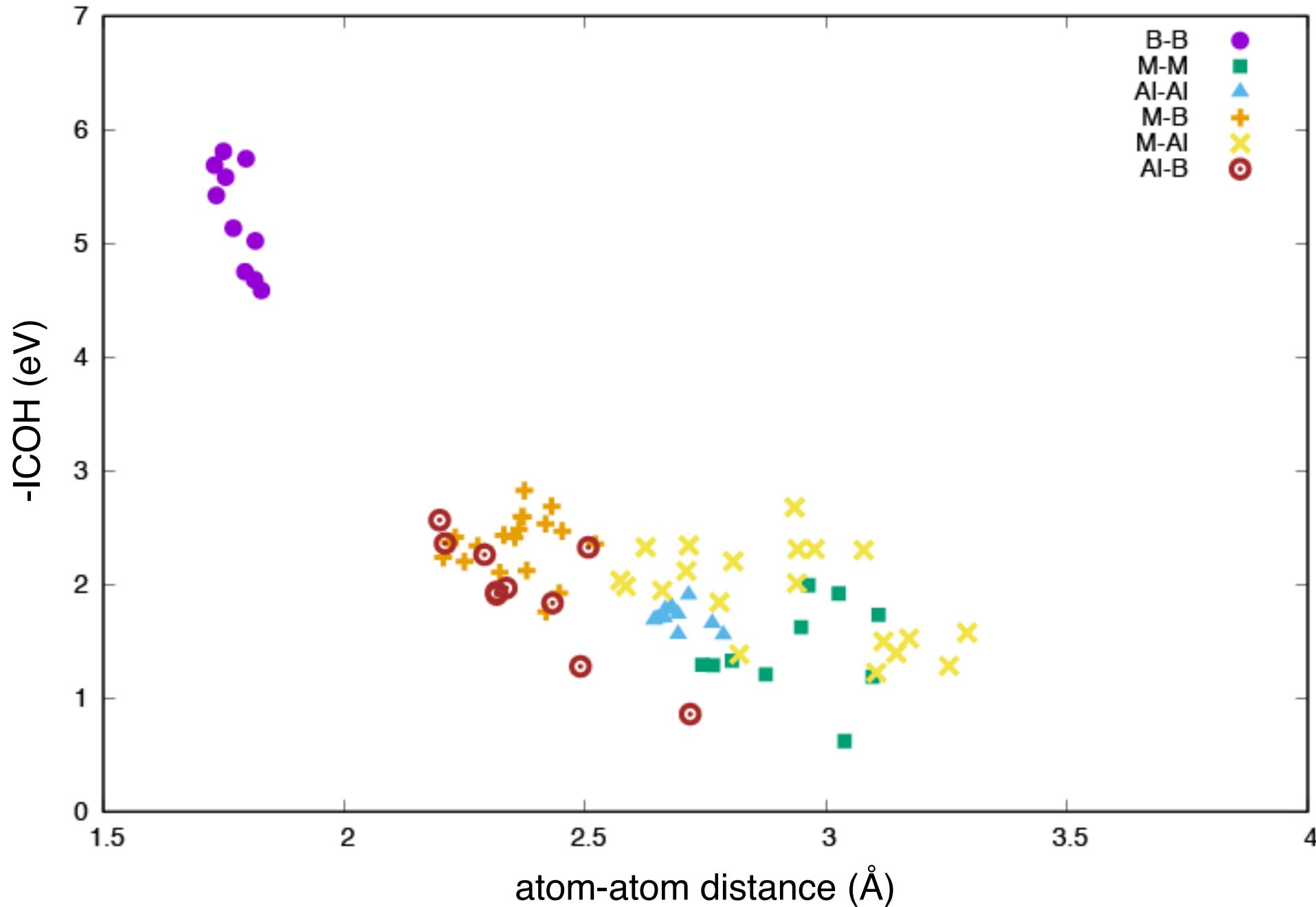


$M_3Al_2B_2$ 

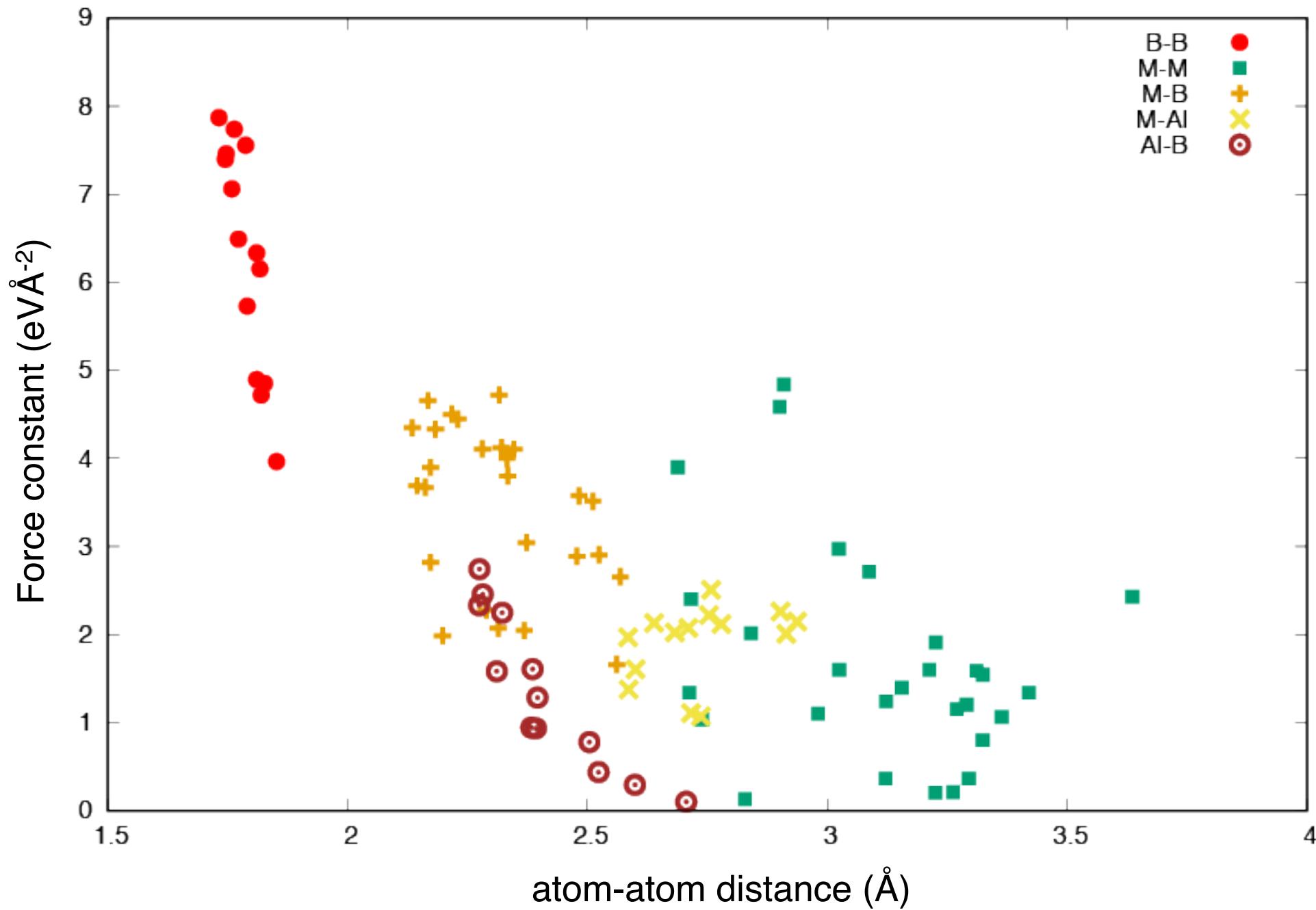


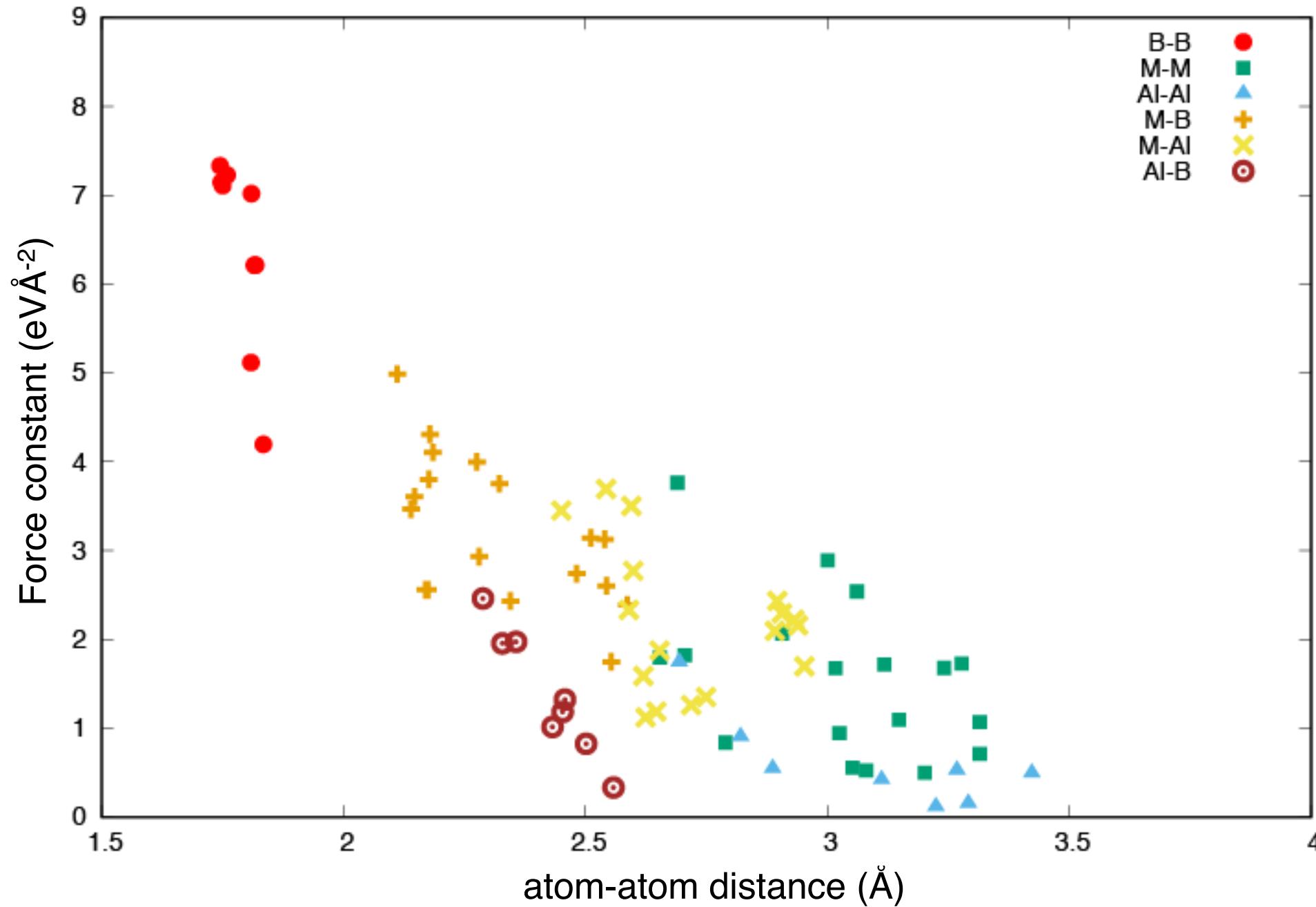
$M_4AlB_6$ 

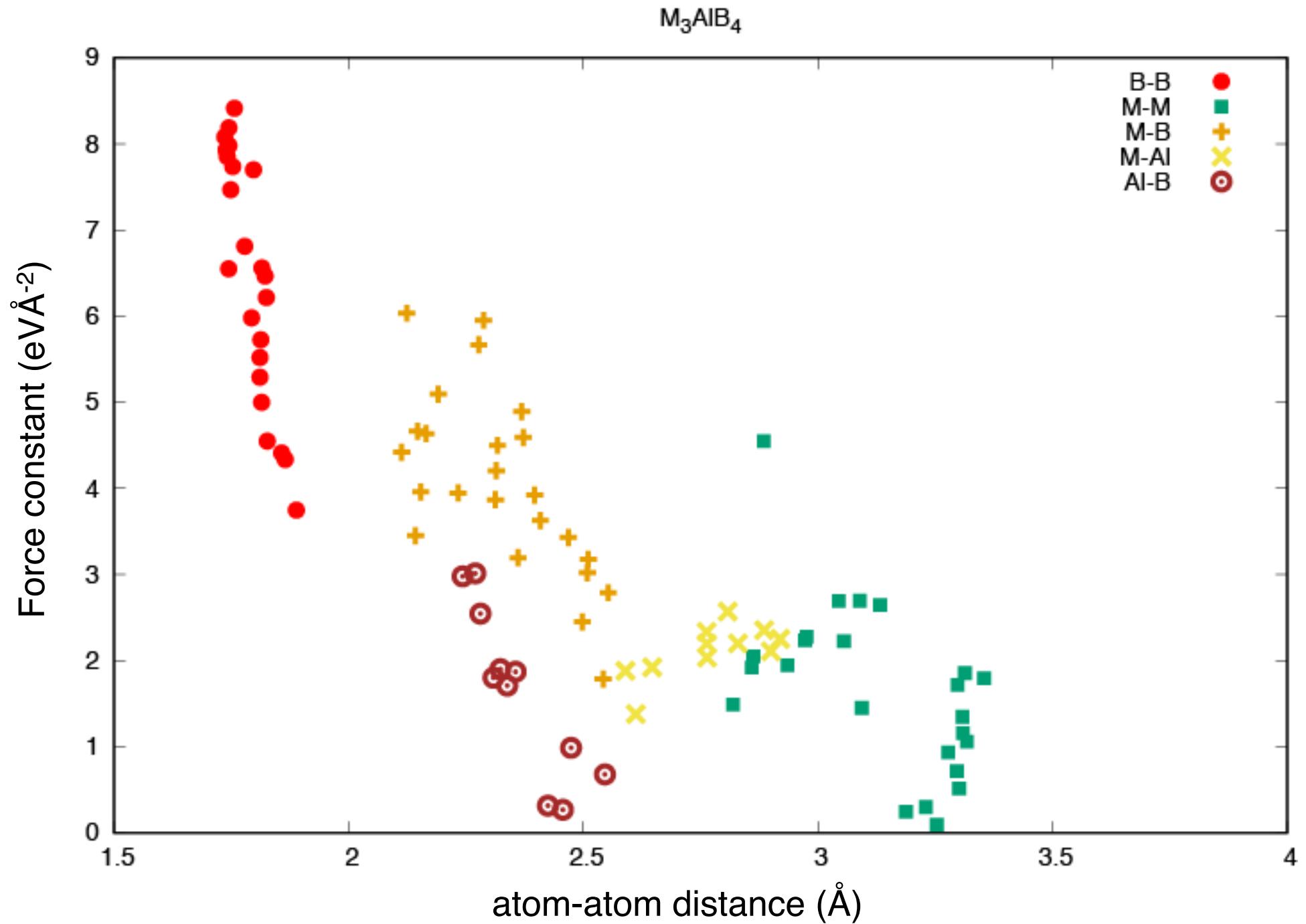
## MAIB

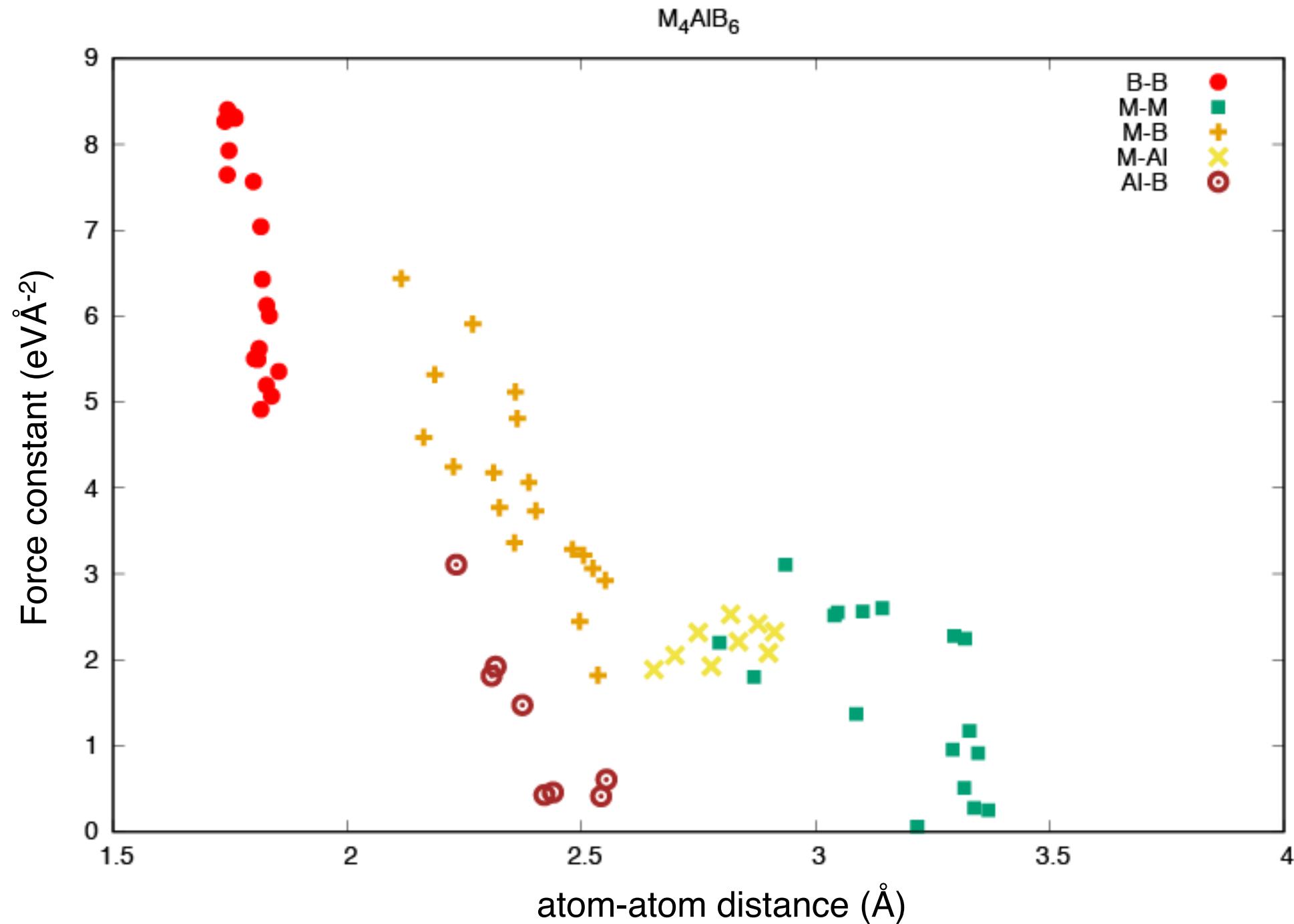


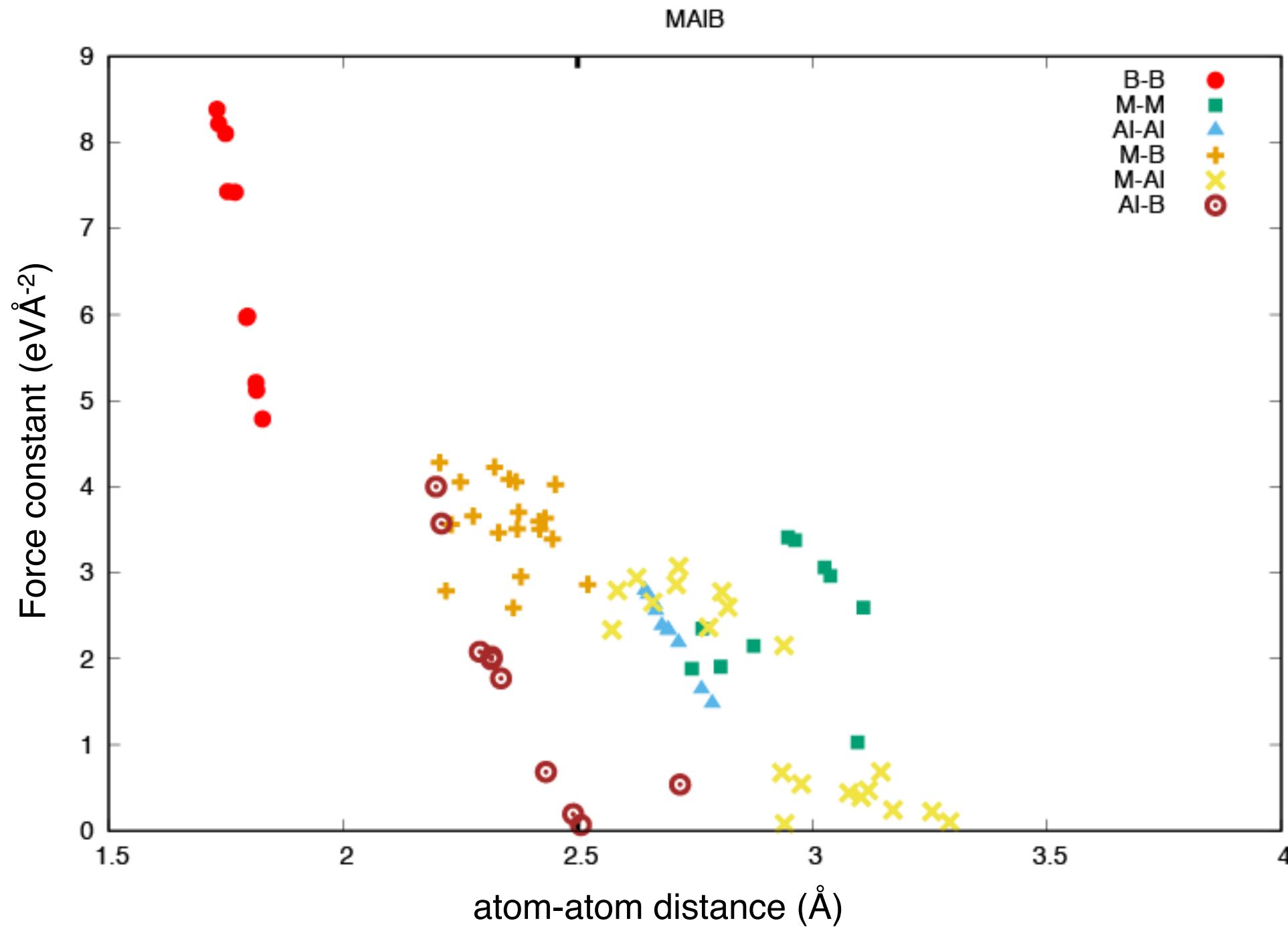
The data in Figure 3(b) are presented for each phase separately

$M_2AlB_2$ 

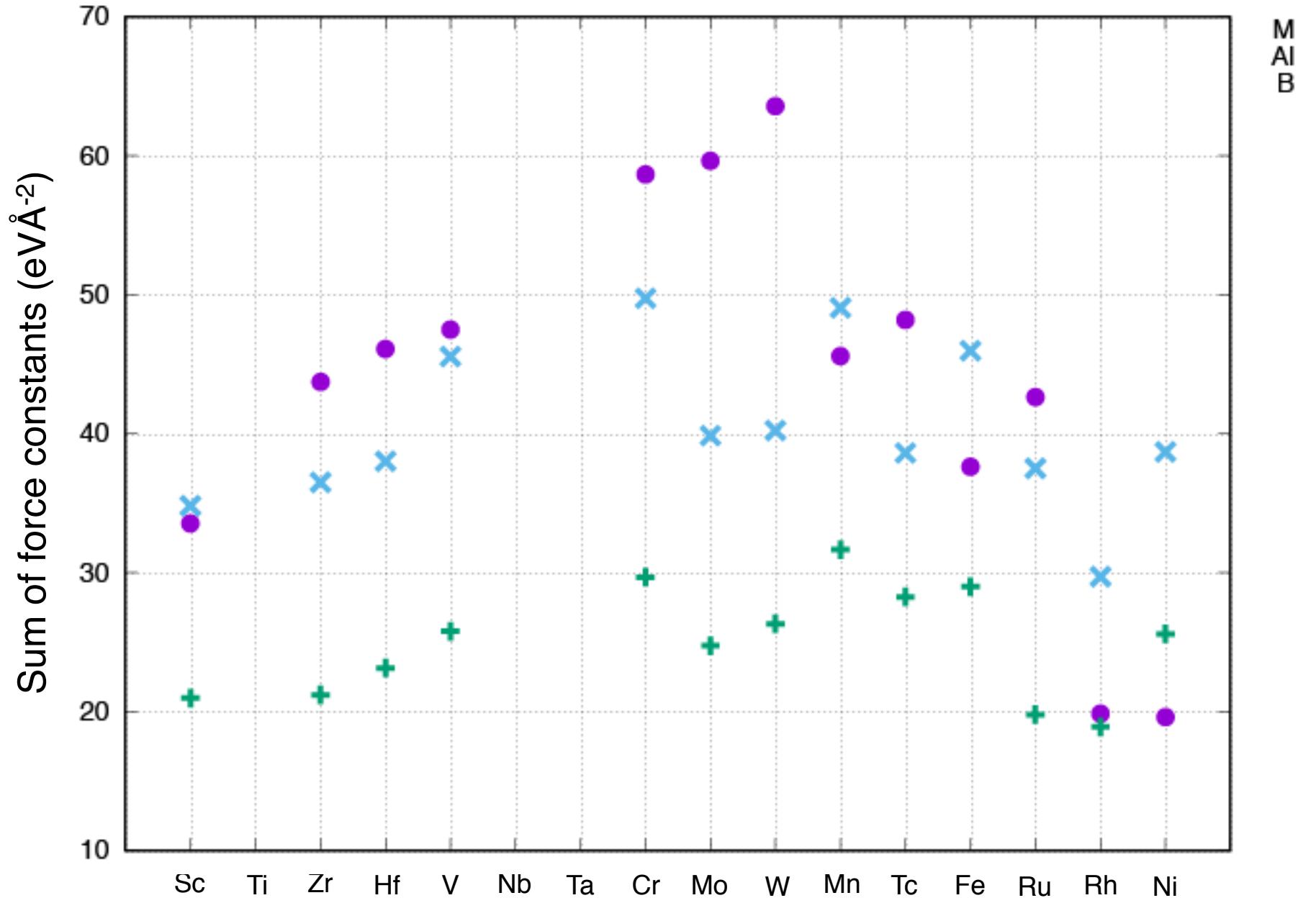
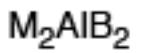
$M_3Al_2B_2$ 

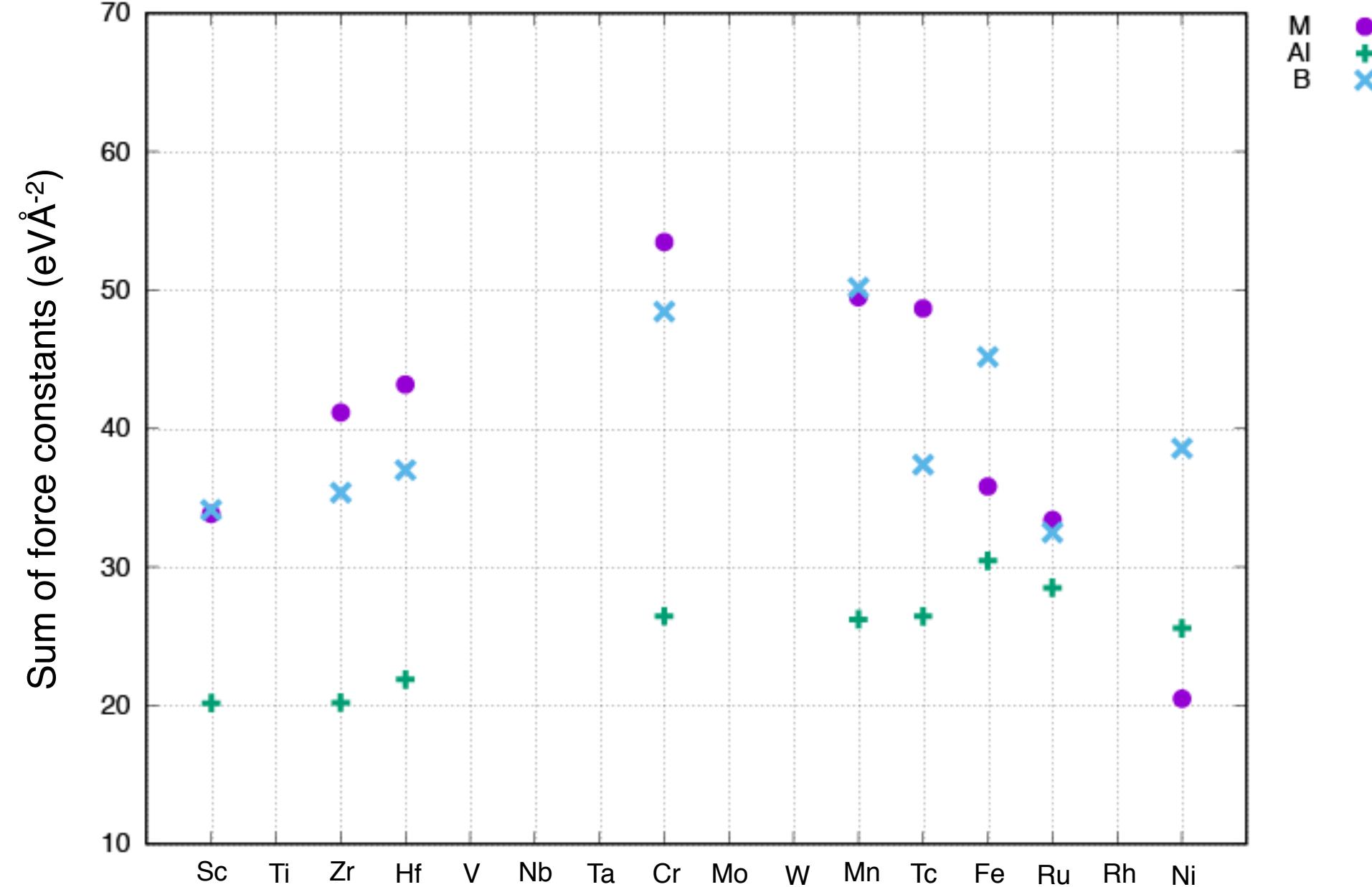
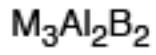


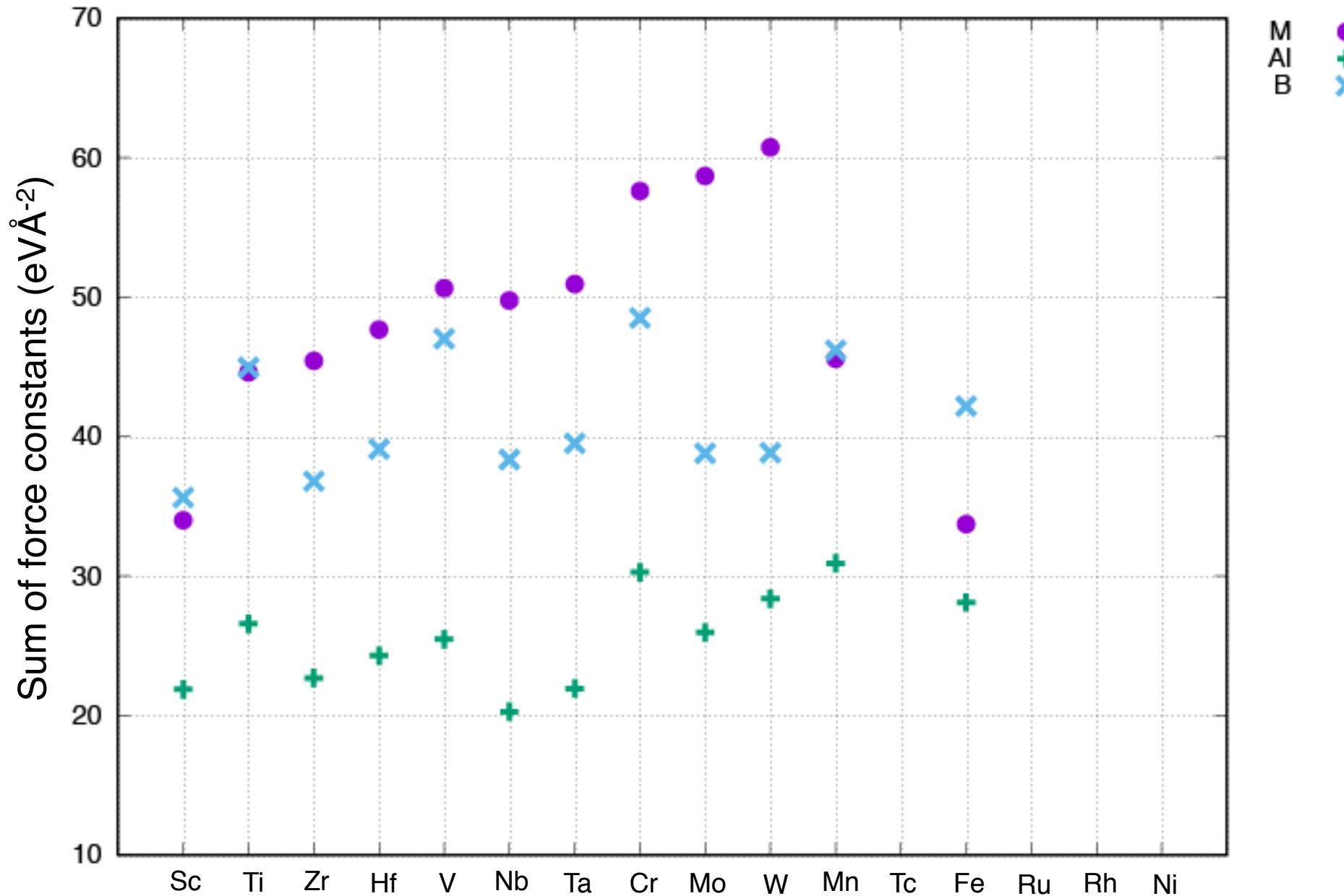


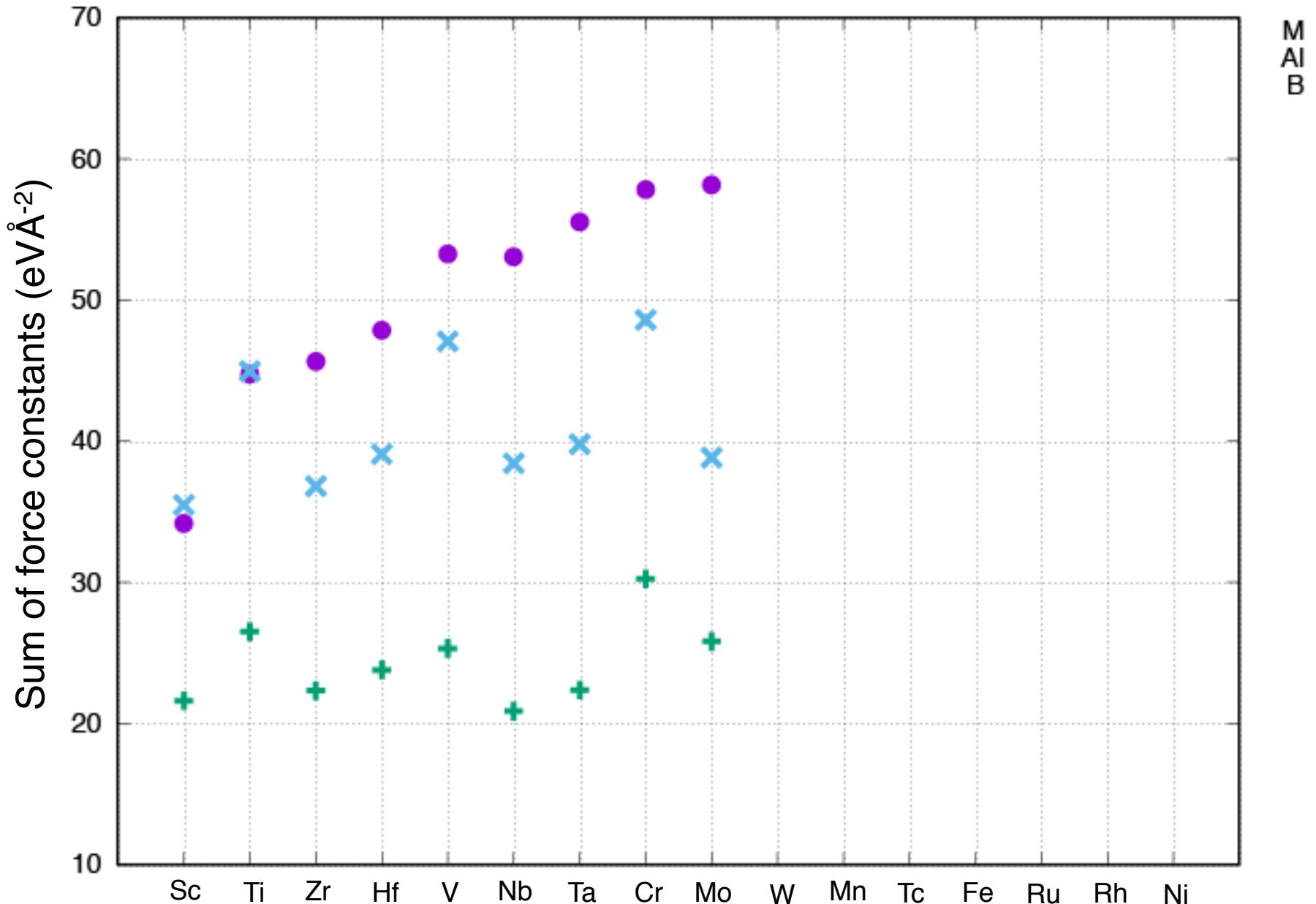


The data in Figure 4(a) are presented for each phase separately

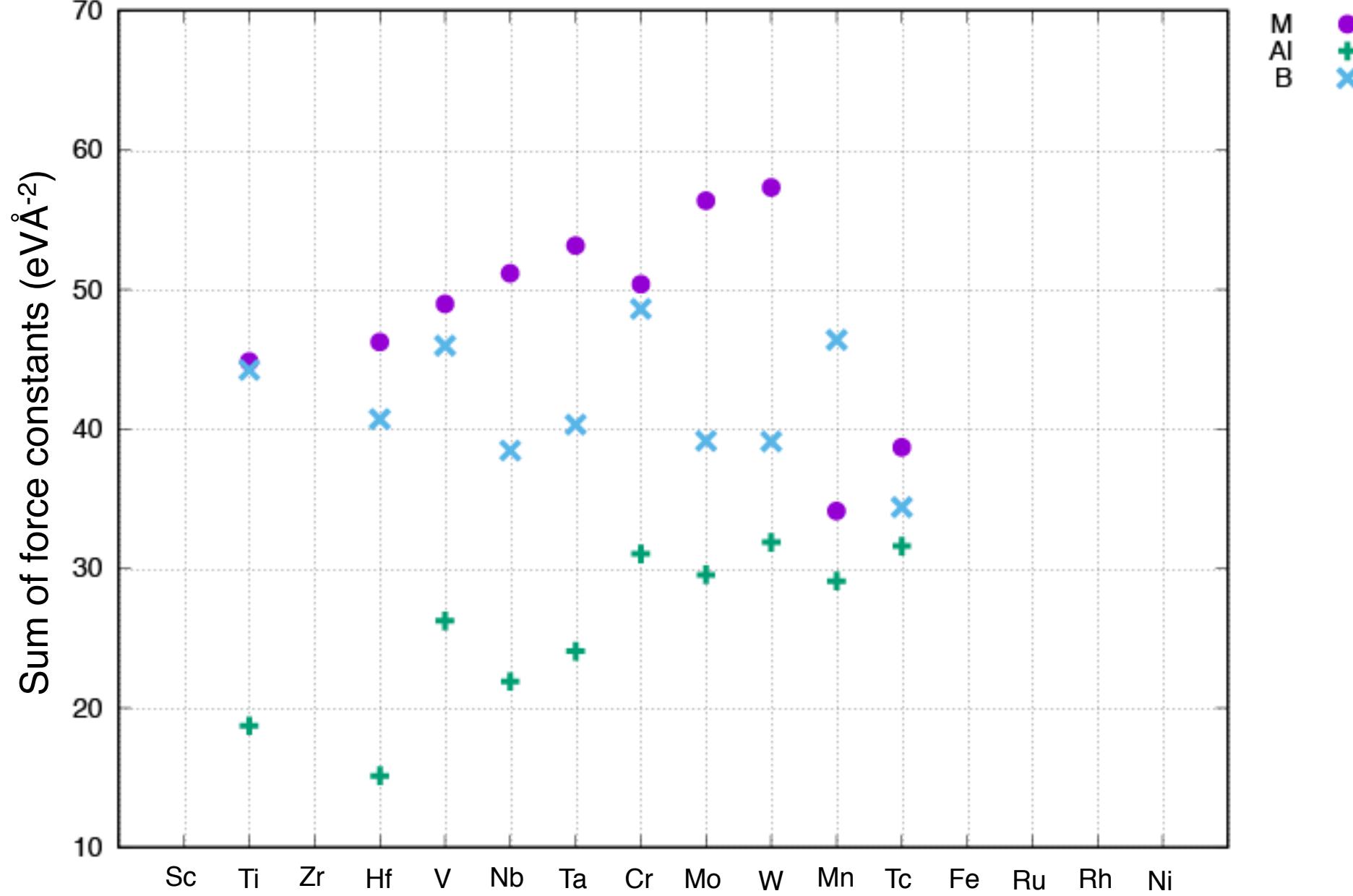




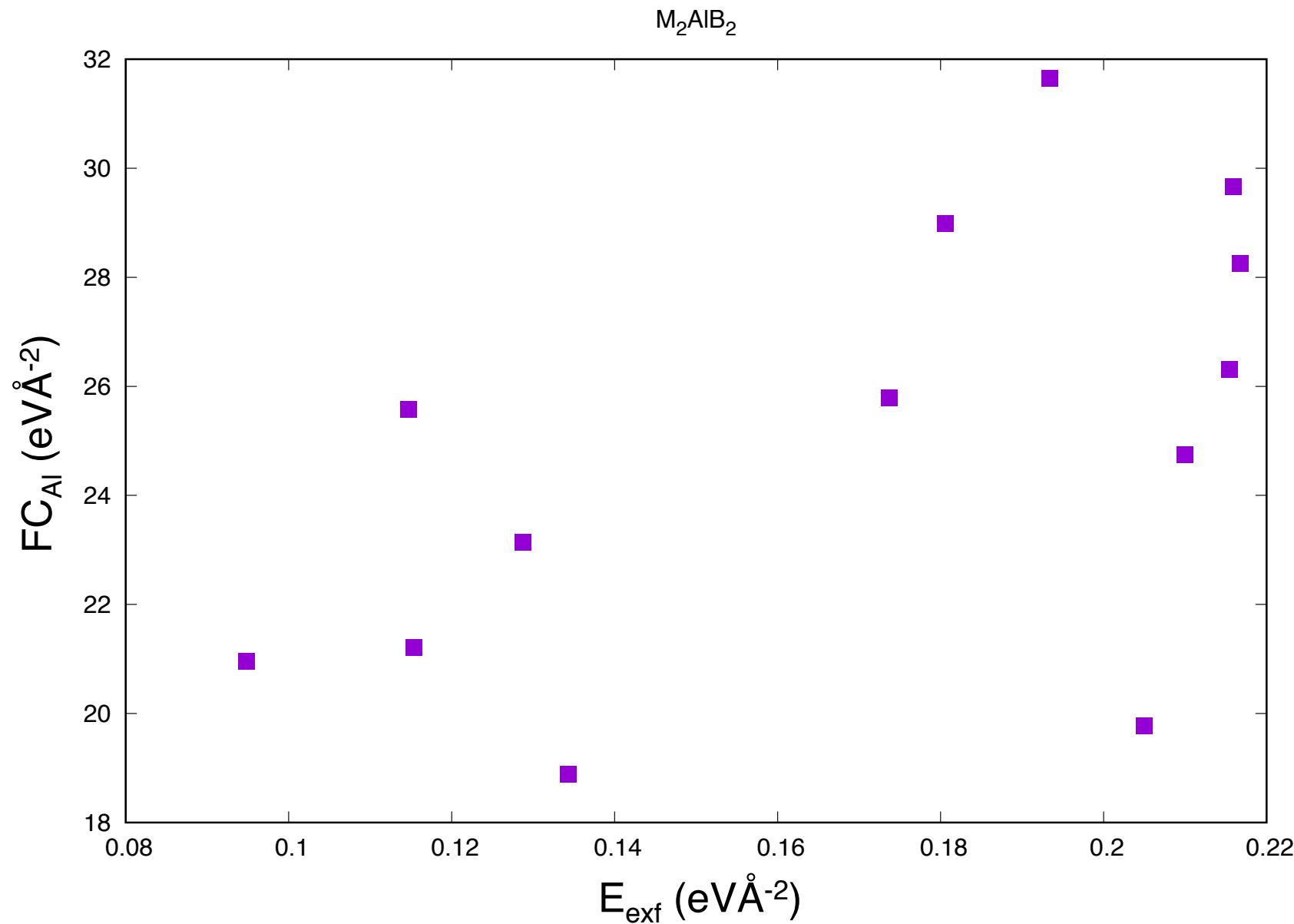
$M_3AlB_4$ 

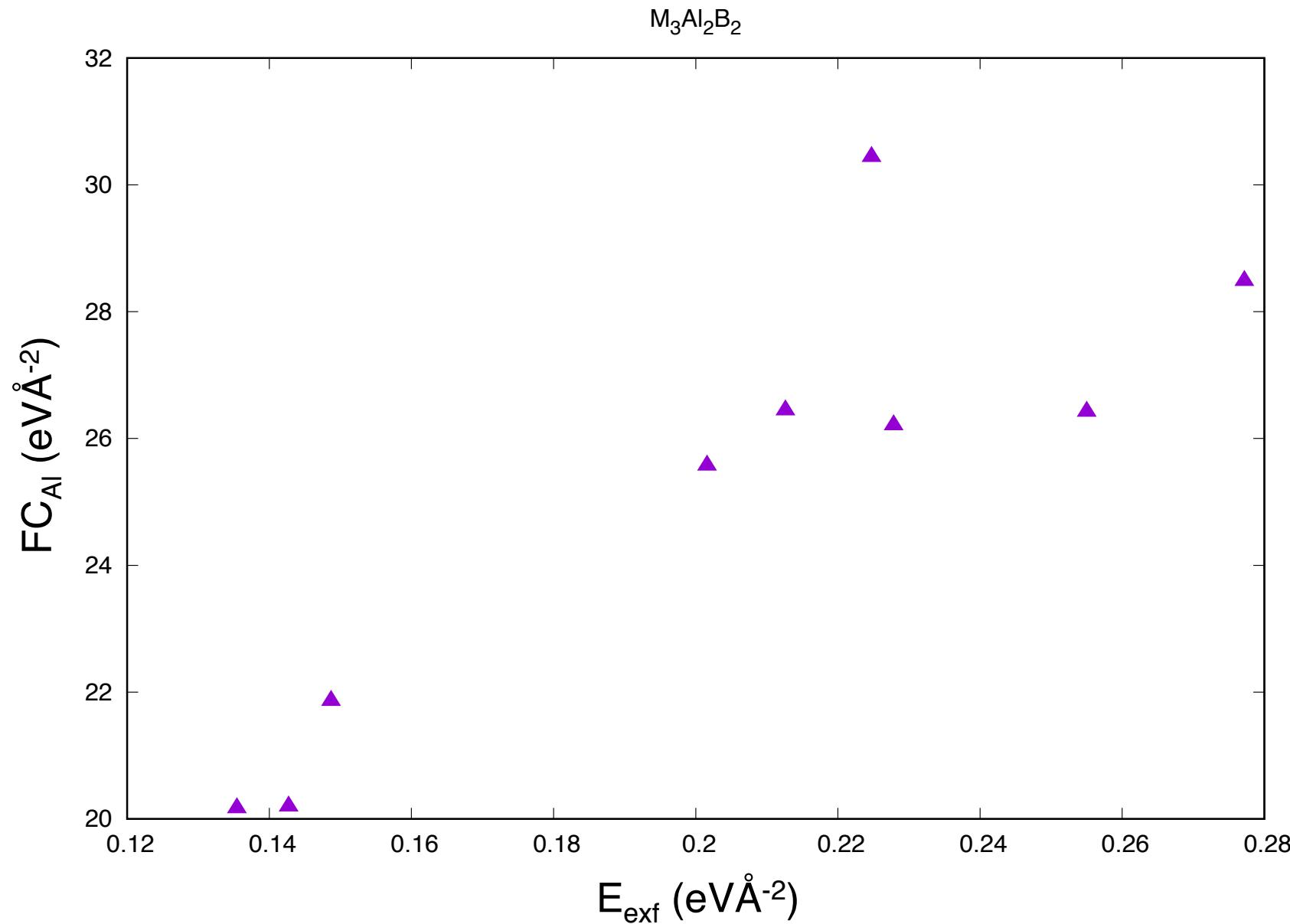


## MAIB



The data in Figure 4(b) are presented for each phase separately





$M_3AlB_4$

