

Figure S1. XRD patterns for one-step heat treated samples of Mn-Al-Ga-Ni.

The  $\gamma_2$  indices in Figure S2 have asterisks to recognize that the  $\gamma_2$  phase is not stable at these temperatures for the binary alloy system. Therefore, these  $\gamma_2$  peaks could be  $\gamma$  or  $\gamma_2$  for the quaternary system. The peaks have been indexed for  $\gamma_2$ .

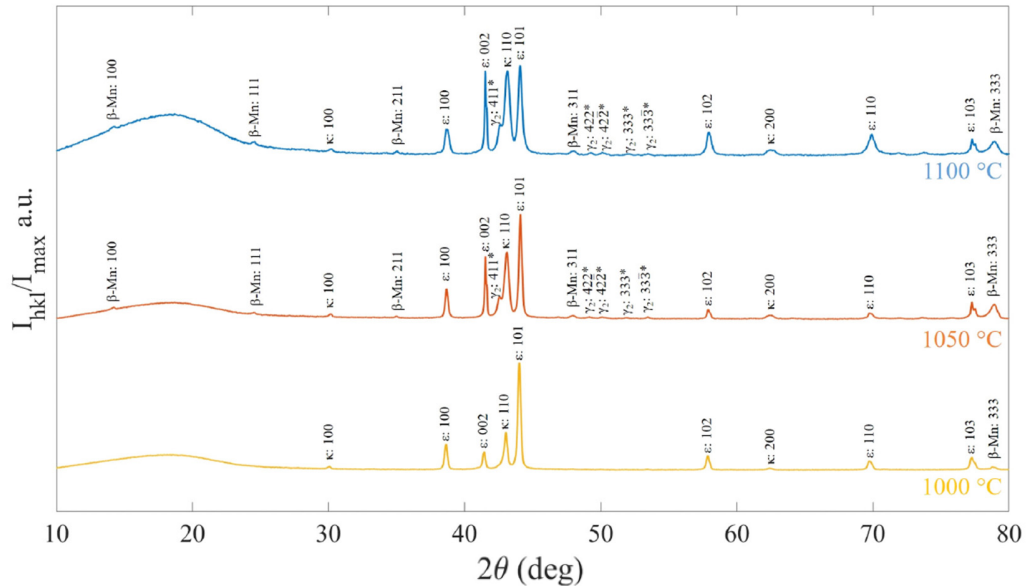


Figure S2. XRD patterns for high temperature annealed samples of Mn-Al-Ga-Ni.

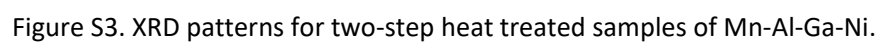


Figure S3. XRD patterns for two-step heat treated samples of Mn-Al-Ga-Ni.