

Design and characterization of $\text{Cr}_{29.7}\text{Co}_{29.7}\text{Ni}_{35.4}\text{Al}_{4.0}\text{Ti}_{1.2}$ precipitation hardened high entropy alloy

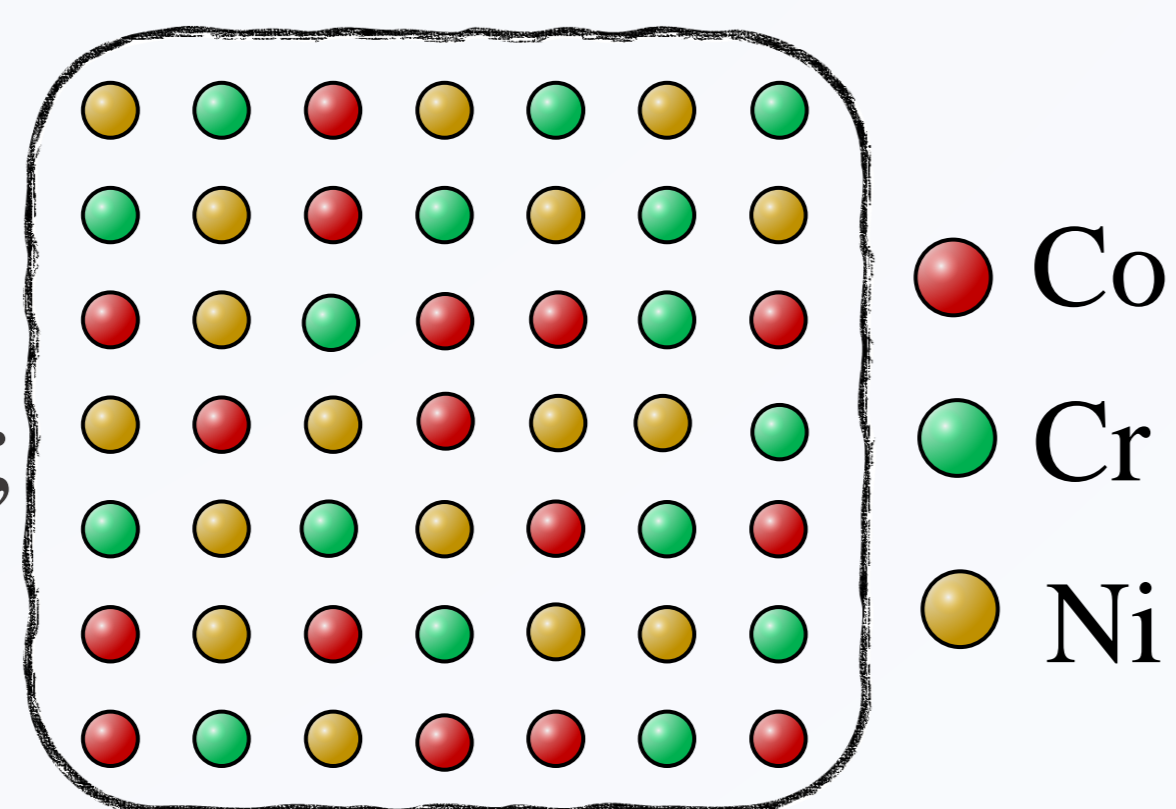
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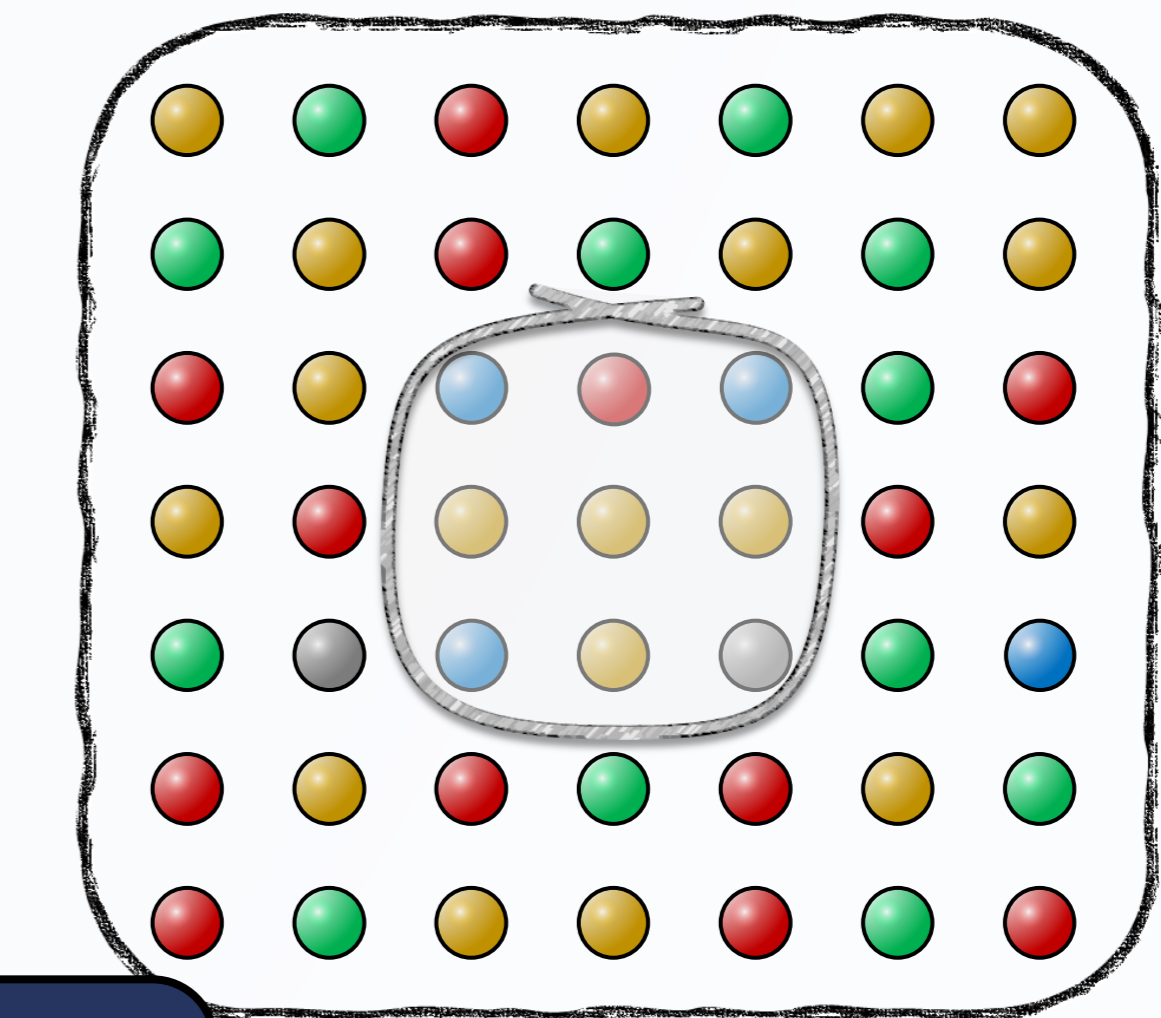
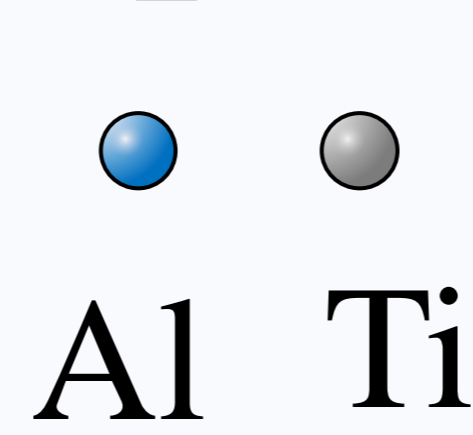
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CrCoNi

- ✓ Strong [1, 2];
- ✓ Toughness [1, 2];
- ✓ Corrosion-Resistance.



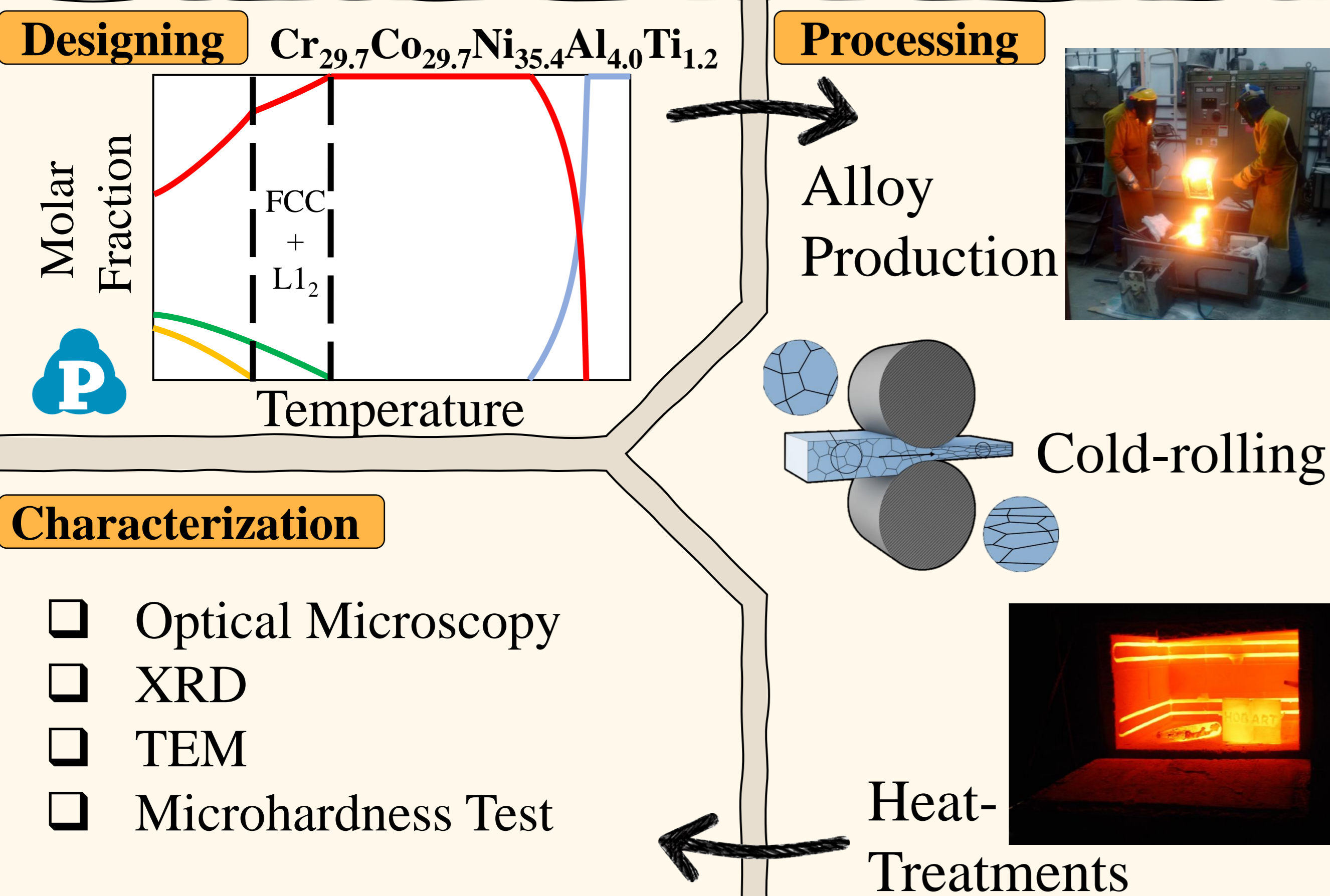
L_{12} formers



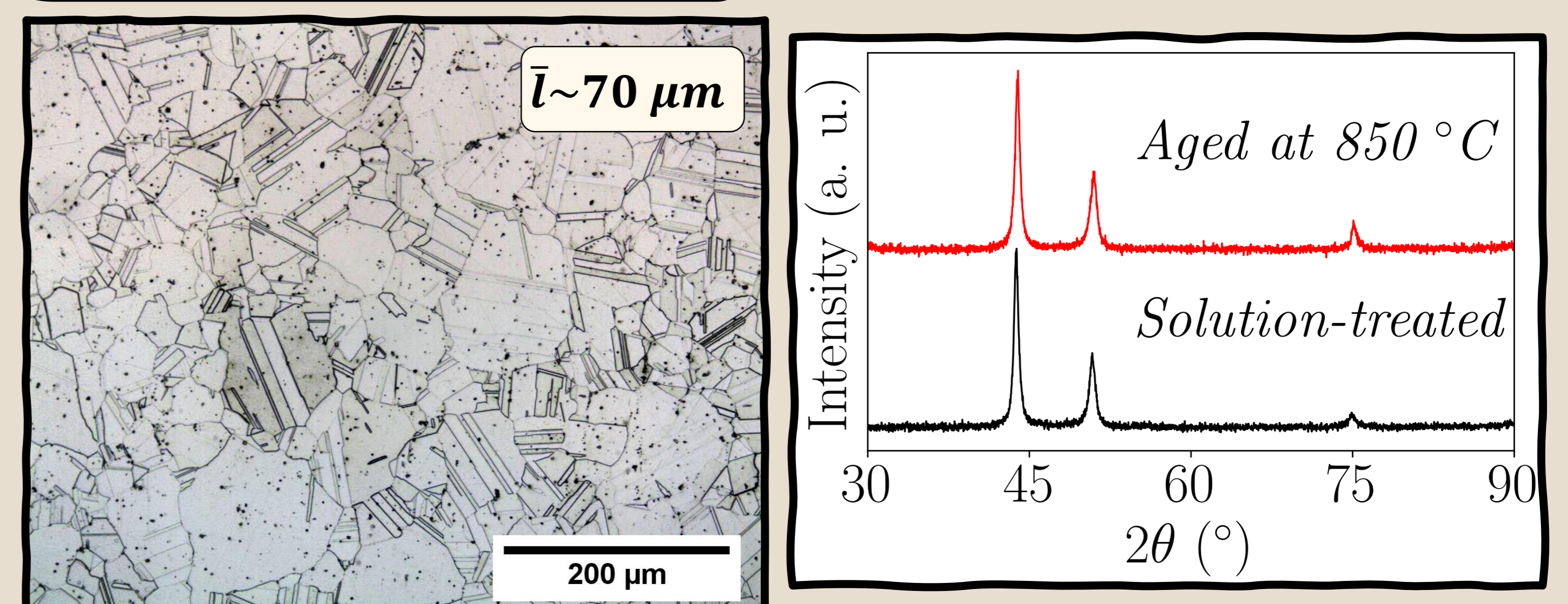
FCC+ L_{12}



Methodology

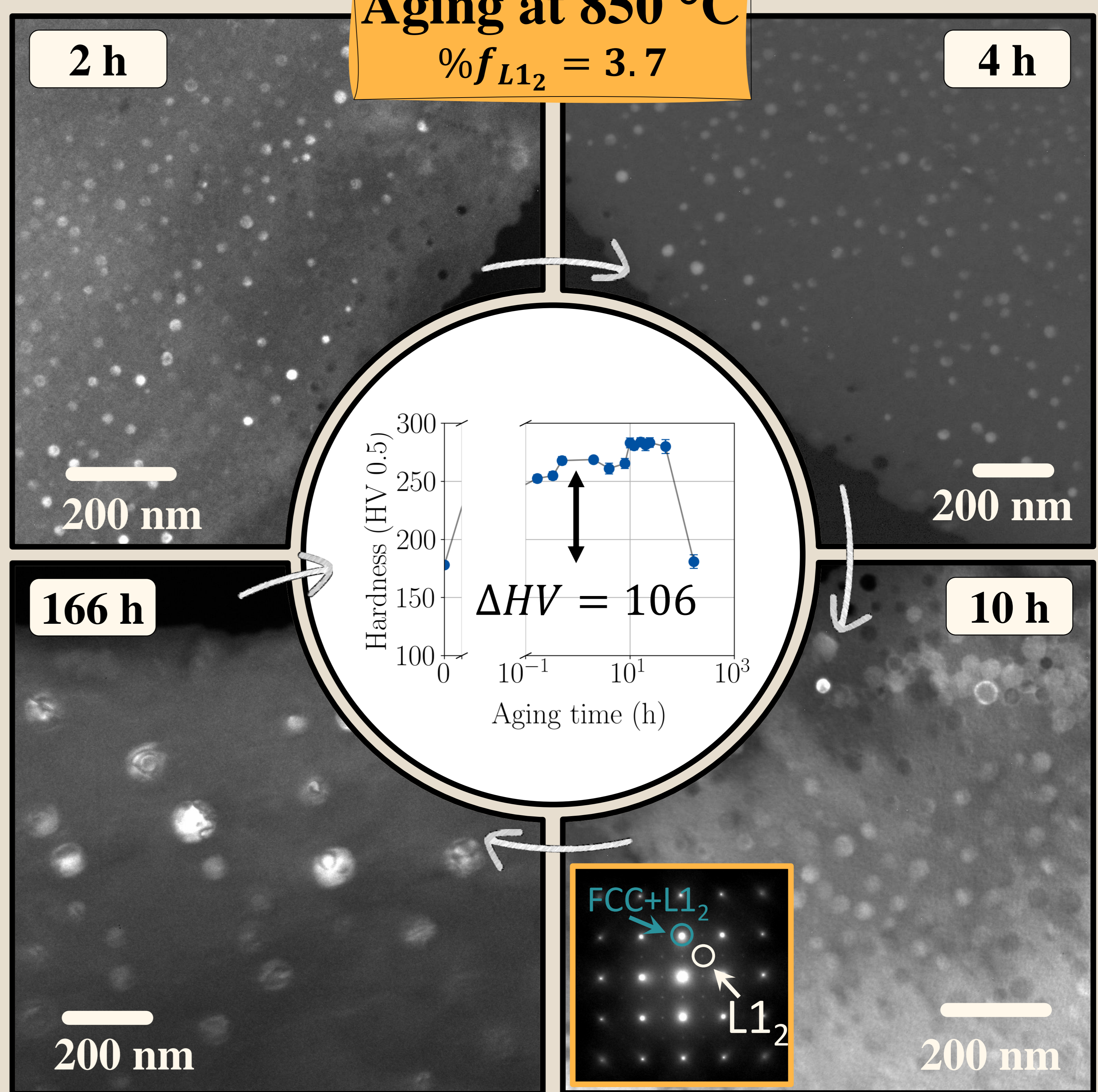


Results



Aging at 850 °C

$\%f_{L_{12}} = 3.7$



Conclusions

- Thermodynamic calculation using CALPHAD method showed a good agreement with experimental results. Only FCC and L_{12} phases were observed.
- Precipitates showed a spherical morphology on all conditions evaluated. No coalescence was seen.
- The hardness increment upon aging was similar to those values observed for Nimonic 105 ($\Delta HV=120$) [3] and A-286 superalloys ($\Delta HV=98$) [4]d, although these alloys present a higher precipitates volume fraction 0.4 and 0.1 respectively.

Acknowledgments

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References

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