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## Mechanical properties and temperature dependence of $\text{B}_{19}\text{Ti}_{50-x}\text{Zr}_x\text{Pt}_{50}$ shape memory alloys

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A molecular dynamic study of  $\text{Ti}_{50-x}\text{Zr}_x\text{Pt}_{50}$  as potential high temperature shape memory alloy has been performed using the LAMMPS code. The lattice dynamics, elastic properties and temperature dependence were deduced to determine the effect of ternary addition with Zr on the Ti sub-lattice at varied temperature range. It was found that the lattice parameter increases with Zr addition, the thermodynamic stability was observed at 5 at. % Zr. Furthermore, the elastic properties showed positive shear modulus for concentrations range 5 - 25 at. % Zr, indicating stability of the structures and instability above 25 at. % Zr concentrations. More importantly, we observed a martensitic transformation behaviour for  $\text{Ti}_{50-x}\text{Zr}_x\text{Pt}_{50}$  ( $x = 3.125, 9.375$ ) at around 900K.

Apply to be considered for a student award (Yes / No)?

Yes

Level for award (Hons, MSc, PhD, N/A)?

PhD

Main supervisor (name and email) and his / her institution

Prof. Hasani Chauke

hr.chauke@ul.ac.za

Would you like to submit a short paper for the Conference Proceedings (Yes / No)?

Yes

**Primary author:** Mr MASHAMAITE, Mordecai (Materials Modeling Centre)

**Co-authors:** Prof. CHAUKE, Hasani (University of Limpopo); Prof. NGOEPE, Phuti (University of Limpopo)

**Presenter:** Mr MASHAMAITE, Mordecai (Materials Modeling Centre)

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