

## World Congress on QUANTUM PHYSICS

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**Compositional effect of Zr-containing ceramic on phase and microstructural evolution of Ti–SiC laser clad coatings****Gabriel Ayokunle Farotade***Tshwane University of Technology, South Africa*

The Ti–SiC–ZrB<sub>2</sub> cermet coatings were fabricated on Ti6Al4 V by laser cladding with a 4kW continuous wave Rofin Sinar Nd:YAG laser system. Three compositions of the cermet coatings of varying percentages of ZrB<sub>2</sub> (0 wt-%, 5 wt-% and 10 wt-%) were added. Scanning electron microscopy and energy dispersive spectroscopy were used to study the microstructure of the coatings while X-ray diffractometry was utilised to investigate the existing phases on the coatings. The microstructures of the coatings were majorly characterised by secondary precipitates of granular TiC and Ti<sub>5</sub>Si<sub>3</sub> in β-Ti matrix. With the addition of ZrB<sub>2</sub>, new phases developed which were dispersed. This resulted in a corresponding increase in surface hardness where the resultant hardness values of the laser clad coatings were found to be approximately four times higher than Ti6Al4V alloy.

**Biography**

Dr. Gabriel Ayokunle Farotade has completed his PhD at the age of 30 years from Tshwane University of Technology, Pretoria, South Africa He is the Energy Engineer at IMAN Africa Energy Group, a multi-faceted energy solution provider in Africa. He has published more than 15 papers in reputed journals and has been serving as a reviewer for international journals.