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Fracture Behavior and Interface Microstructure Studies on Ti/Al Sheet Metal Joint using Laser Beam Welding

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Description The development of sheet metal welding process requires a comprehensive understanding of interface microstructures and fracture behavior in dissimilar metal pair using laser beam welding. Many metal pairs suffer from significant intermetallic phase formation during welding. The fracture path of the joints is mainly decided by the microstructure of the weld. In this investigation, Titanium Grade5 (Ti) and AA2024 (Al) alloy sheets are joined using laser beam welding and fracture morphologies are analyzed in different regions of the weld joint. From literature survey, it is observed that most of the studies were carried out in Ti-Al dissimilar welding joint focusing only from the Al side. In this work, laser beam is focused both from Ti as well as Al sides to study melt flow on weldment and the results especially fracture behavior and microstructure are reported. Also, SEM analyses at different magnifications are observed for …