
Advanced Materials Research Group

project summary

Project Title	Lifetime Improvement of fan Blade Root through Solid Lubricant Coating
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Project Summary	<p>Ti6Al4V is used for turbine discs and blades in the aero-engine industry. In the aerospace industry, fretting is an important component of failure in fan blade roots. Small oscillatory motion in the fan blade root initiates fretting wear. Over time wear occurs and may result in crack development, and disc or blade failure as a consequence. The problem of fretting is currently addressed using coatings including dry film lubricant (DFL). By understanding the wear mechanism and improving coating system by DFL, a longer life time of fan blade root can be achieved. In my thesis a commercially used DFL, which is dry film lubricant containing MoS₂ is compared with a high performance multiphase polymer bonded dry film lubricant in order to understand the different wear mechanisms. In addition, this work also involves developing new dry film lubricant, which can partially achieve longer life time of the fan blade root. The performance of the new developed DFL will be conducted with commercial DFL, high performance multiphase polymer bonded DFL. The wear mechanism will also be investigated and compared.</p>