Monitoring Bondline Integrity via Embedded Piezoelectric Sensor

Presenter: Yitao Zhuang
Adviser: Prof. Fu-Kuo Chang
Lab: Structures and Composites Laboratory

Bonded joints show advantages over conventional bolted joints on the weight, cost and fatigue performance. However, lacking the capability to monitor the integrity level is the road-block of the wide adoption of the adhesive on aircraft structure. An innovation approach by embedding sensor directly into the bondlines has been developed and demonstrated with capability to monitor the degradation of the bondlines, esp. the kissing bond, one of the most challenging defects found in bonded joints. This result can increase the confidence level of designing and manufacturing the bonded joints, and lead to a lighter and more efficient structure for future aircraft.