

## **Abstract**

One of the most common forms of failures observed in brittle thin films subjected to stress is cracking. The crack growth rate depends on intrinsic film properties, stress and some environmental factors. We investigate central crack on different material planes. The planes are made from silicon, copper, aluminum, polyamide and silicon nitride. Each plane is 1.0m x 0.4m and has a crack length of 0.04m. Because of symmetry only 0.5m and 0.2m of the plate is used. They are subjected to a normal stress of 100MPa. A two dimensional (2D) Finite Element Analysis (FEA) model is developed and ANSYS software is used to calculate the MODE I Stress Intensity Factor (SIF) on each material plane. Silicon had a SIF of 21.562, aluminum 23.838, copper 23.383, polyamide 24.948 and silicon nitride 22.371. From the results, silicon had the lowest MODE I SIF while polyamide had the highest.