ANALYTICAL AND EXPERIMENTAL CHARACTERIZATION OF CERAMIC COMPOSITE HYBRID STRUCTURE

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FATIGUE AND DURABILITY OF CERAMIC COMPOSITE HYBRID STRUCTURE

Strike face for ceramic composite hybrid structure.

Face sheet  Adhesive layer (may or may not be a discrete layer) Discontinuous ceramic core

FATIGUE AND DURABILITY OF CERAMIC COMPOSITE HYBRID STRUCTURE

Analytical Model

Global stress analysis

Unsmearing

Critical Stress States Failure Analysis

Experiments to generate strength allowables

S/N curves

MOTIVATION

- Develop test methods to generate failure property data for analysis of discontinuous ceramic composite hybrid structure.
  - Experimental Characterization
    - Static
    - Fatigue
  - Environment: room temperature, ET etc.
  - Analytical Treatment
    - Analytical/FEA
    - Smearing/un-smearing approach
  - Evaluation of Materials
    - Matrices
    - Preforms
    - Interlayers
    - Pretreatments etc

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