The purpose of this study is estimation of tensile strengths at elevated temperature, which are complicated as strength of one composite is significant temperature dependence but another is not, by employing the simultaneous-fiber failure (SFF) model [1].

**SFF model [1]**

\[
P = 1 - \exp\left(-\frac{E_{d0}}{E_{d0} - 1}\right)
\]

**Conventional model**

\[
P = 1 - \exp\left(-\frac{E_{d0}}{E_{d0} - 1}\right)
\]

**SFF model**

\[
P = 1 - \exp\left(-\frac{E_{d0}}{E_{d0} - 1}\right)
\]

**SFF unit**

\[
P = 1 - \exp\left(-\frac{E_{d0}}{E_{d0} - 1}\right)
\]

**Fiber pull-out**

\[
\tau_{f} = \frac{G_{f}}{\sigma_{m}}
\]

\[
\tau_{f} = \frac{G_{f}}{\sigma_{m}}
\]

**Brittle fracture**

\[
\tau_{f} = \frac{G_{f}}{\sigma_{m}}
\]

**LLS**

\[
\tau_{f} = \frac{G_{f}}{\sigma_{m}}
\]

**Experimental results of matrix strength as function of temperature; time-to-failure is 30 sec.**

**Results and Conclusion**

**Same matrix, same interface are used for these composites.**

Relatively low modulus and strength fiber (XN05)

Relatively high modulus and strength fiber (XN05)

Temperature dependence of tensile strength of unidirectional composites are successfully estimated by SFF model.

**Acknowledgement:** We extend our sincere gratitude to Professor Richard M. Christensen (Department of Aeronautics and Astronautics, Stanford University) for his helpful discussions and comments.