beta_micro

Computes coefficients of moisture expansions in local directions

Inputs

Ef - Fiber elastic modulus
Em - Matrix elastic modulus
nuf - Fiber Poisson's ratio
numm - Matrix Poisson's ratio
Vf - Fiber volume fraction
betam - Matrix coefficient of moisture expansion

Outputs

beta12 - [beta1 beta2 beta12]
beta1 - Local coefficient of moisture expansion in x-direction
beta2 - Local coefficient of moisture expansion in y-direction
beta12 - Local in-plane coefficient of moisture expansion in x-y plane

Calling the Function

```
[beta12]=beta_micro(Ef,Em,nuf,numm,betam,Vf)
```

Testing File

Click here to see a testing file for using the function beta_micro

Example

Inputs:

Fiber Elastic Modulus: 2.3e+11
Matrix Elastic Modulus: 3.4e+09
Fiber Poisson`s Ratio: 0.3
Matrix Poisson`s Ratio: 0.2
Matrix Coefficient of Moisture Expansion: 0.33
Fiber Volume Fraction: 0.7

Outputs:

Lamina Coefficient of Moisture Expansion

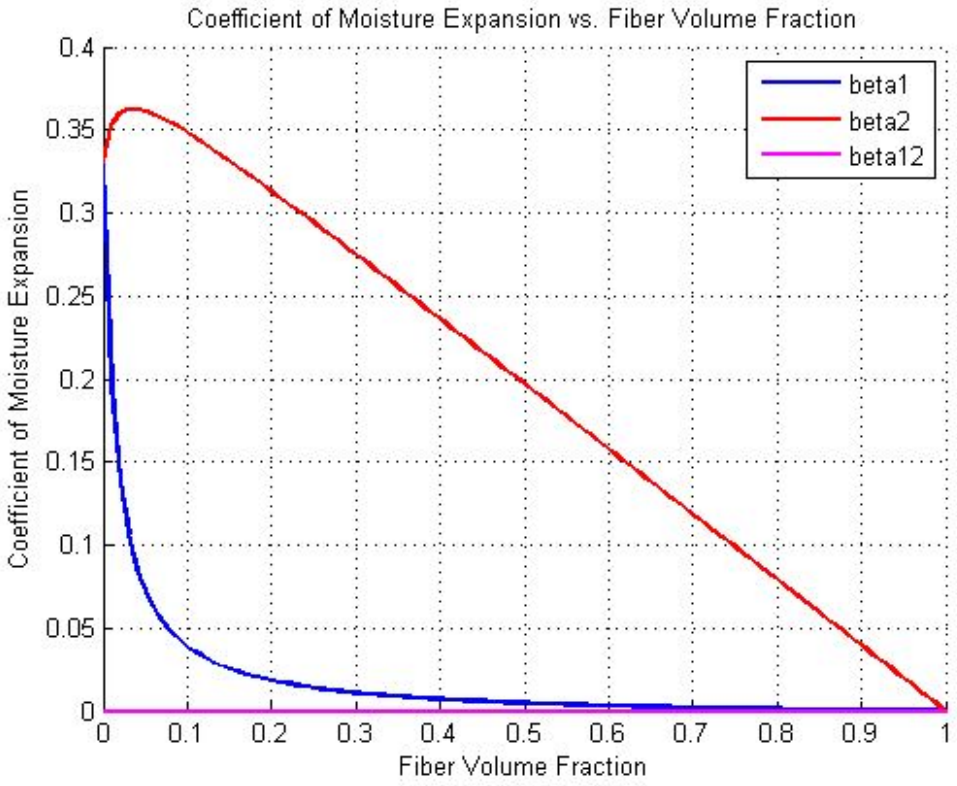
beta1	0.00207752
beta2	0.118239
beta12	0

Table:

Lamina Coefficient of Moisture Expansion

Vf	beta1	beta2	beta12
0.00	3.300000E-01	3.300000E-01	0
0.10	3.874904E-02	3.482627E-01	0
0.20	1.842365E-02	3.127468E-01	0
0.30	1.100308E-02	2.746693E-01	0
0.40	7.158656E-03	2.358819E-01	0
0.50	4.807198E-03	1.967982E-01	0
0.60	3.220436E-03	1.575627E-01	0
0.70	2.077521E-03	1.182391E-01	0
0.80	1.215075E-03	7.885978E-02	0
0.90	5.411402E-04	3.944307E-02	0
1.00	0.000000E+00	0.000000E+00	0

Graph:



Description

Outputs local coefficients of moisture expansion in matrix form:
[beta1,beta2,beta12]