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(Sandhu)

Archive of SID

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S-N

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(Plumtree) [ ] S-N [ ](Hashin - Rotem) /

[ ]

(Sims) [ ] (Brodon) [ ] (El kadi) (Ellyin) [ ] (Sandhu )

(Plumtree)  $N_f$  [ ] (Ellyin) (Fawaz)

(Sandhu) S-N [ ] (Philippidis) (Fawaz)

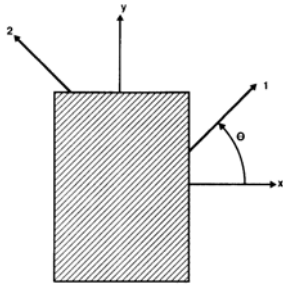
[ ] [ ] (Kawai)

(Plumtree) [ ] (Cheng)

SWT [ ]

[ ] (Petermann) (Plumtree)

(x-y)



(x-y)

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[ ] (Plumtree)

$W^*$

( )

$$W^* = \lambda(\sigma_2^{\max} \varepsilon_2^{\max} + \sigma_6^{\max} \varepsilon_6^{\max})$$

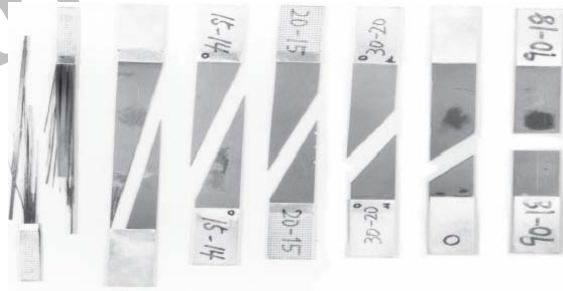
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$$\varepsilon_6 \quad \varepsilon_2 \quad \sigma_6 \quad \sigma_2 \quad \lambda = \frac{1-R^2}{2}$$

R

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0,10, 20, 30, 45, 60, 90°)

S-N

( $\theta =$

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S-N

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$$\theta_{transition} = \text{Arc tan}\left(\sqrt{\frac{X_t}{Y_t}}\right) = \text{Arc tan}\left(\sqrt{\frac{56.9}{1836}}\right) = 9.98^\circ$$

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$Y_t \quad X_t$

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$$\Delta W_I^* = \frac{1}{X \varepsilon_{1u}} (\sigma_{1 \max} \varepsilon_{1 \max} - \sigma_{1 \min} \varepsilon_{1 \min}) \quad (1)$$

(1) [ ] (Sandhu)

$$\Delta W_I^* = \frac{1}{X^2} \frac{(1+R)}{(1-R)} (\Delta \sigma)^2 \quad (2)$$

$$R = \sigma_{\min} / \sigma_{\max} \quad (3)$$

$$\Delta W_I^* = \frac{1}{X^2} \frac{(1+R)}{(1-R)} (\Delta \sigma_x)^2 (\cos^4 \theta) \quad (4)$$

$$\frac{\sigma_1 \varepsilon_1}{X \varepsilon_{1u}} + \frac{\sigma_2 \varepsilon_2}{Y \varepsilon_{2u}} + \frac{\sigma_6 \varepsilon_6}{S \varepsilon_{6u}} = 1 \quad (5)$$

$$\frac{\sigma_6}{\varepsilon_{6u}} \frac{\sigma_2}{\varepsilon_{2u}} \frac{\sigma_1}{\varepsilon_1} \quad (6)$$

$$\Delta W_{II}^* = \frac{1}{Y^2} \frac{(1+R)}{(1-R)} (\Delta \sigma_x)^2 (\sin^4 \theta) \quad (7)$$

$$\Delta W_{III}^* = \frac{1}{S^2} \frac{(1+R)}{(1-R)} (\Delta \sigma_x)^2 (\sin^2 \theta \cos^2 \theta) \quad (8)$$

$$\Delta W^* = \Delta W_I^* + \Delta W_{II}^* + \Delta W_{III}^* = \frac{\Delta \sigma_1 \Delta \varepsilon_1}{X \varepsilon_{u1}} + \frac{\Delta \sigma_2 \Delta \varepsilon_2}{Y \varepsilon_{u2}} + \frac{\Delta \sigma_6 \Delta \varepsilon_6}{S \varepsilon_{u6}} \quad (9)$$

$$\Delta W^* = \Delta W_I^* + \Delta W_{II}^* + \Delta W_{III}^* = \frac{(1+R)}{(1-R)} (\Delta \sigma_x)^2 \left( \frac{\cos^4 \theta}{X^2} + \frac{\sin^4 \theta}{Y^2} + \frac{\sin^2 \theta \cos^2 \theta}{S^2} \right) \quad (10)$$

$$\Delta W^* \quad (11)$$

$$(R \geq 0) \quad (12)$$

$$\Delta W^t = g(N_f) \quad (13)$$

$$\Delta W = \frac{1}{2} (\Delta \sigma_1 \Delta \varepsilon_1 + \Delta \sigma_2 \Delta \varepsilon_2 + \Delta \tau_{66} \Delta \gamma_{66}) \quad (14)$$

(Kawai)

$$\Delta W^t = k N_f^\alpha + C$$

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(T800H/2500)

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C  $\propto$  k

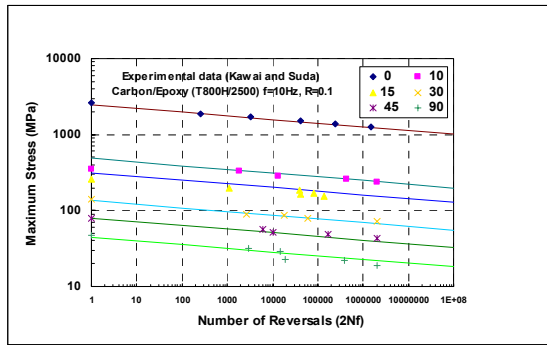
( $\theta = 0, 10, 15, 30, 45, 90^\circ$ )

$\alpha$  k.

( )

/

C



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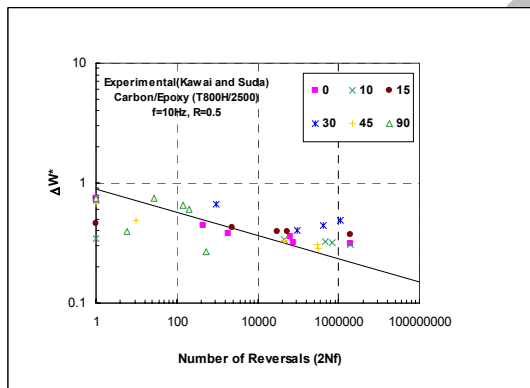
C

$$\Delta W^* = k N_f^\alpha$$

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$\alpha$  k

[ ] R=0.1



R=0.1 (2Nf)

$\Delta W^*$

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(Plumtree)

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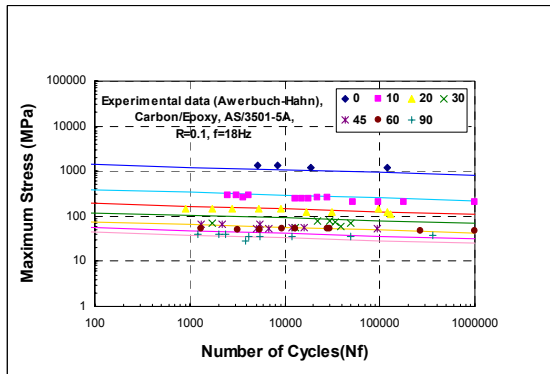
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$$\Delta W^* = 0.8928(2N_f)^{-0.09717}$$

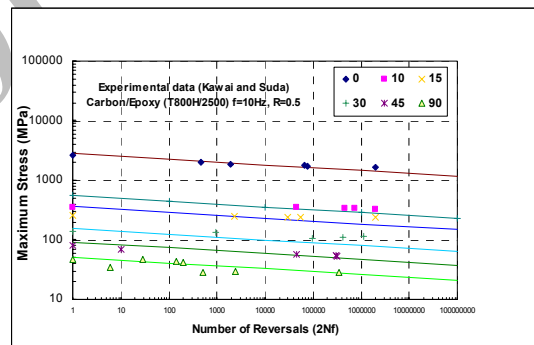
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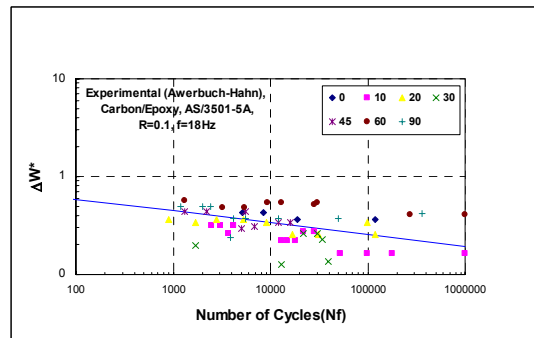
$$\Delta W^* = 1.028(2N_f)^{-0.1211}$$



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 .[ ] R=0.1



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 .[ ] R=0.5



R=0.1 (Nf)  $\Delta W^*$  :  
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