

Figure 4 shows the variation of crack length (c) under crack closure effect for stress ratio $R = 0.1$ and the closure factors $C_{f0} = 0.3$. For L-T and T-L orientation, we notice that there is shift of the fatigue crack growth curve towards the right in the presence of closure phenomenon compared to the absence of the delay. This shift results in a delay in the fatigue crack growth rate curve. We notice also the same effect of the orientations in presence of the closure phenomenon.

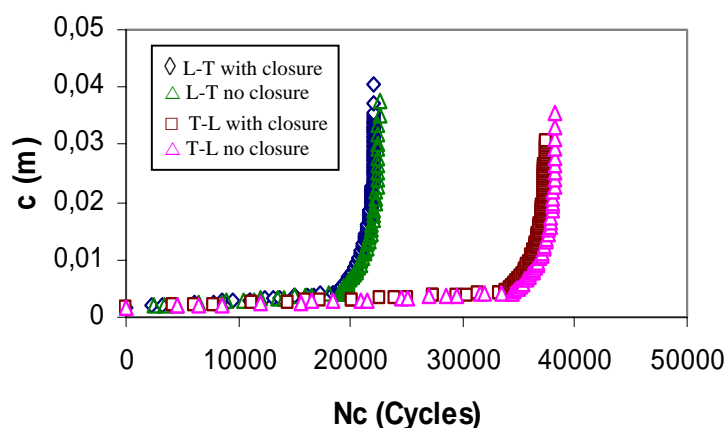


Figure 4 modified

Figure 4 Effect of orientation on fatigue crack growth for $R = 0.1$

Conclusion

The paper presents the fatigue crack growth of semi elliptical crack in SENT specimen semicircular notch for aluminum alloy 2024 T351. The stress ratio R affects the total fatigue life. The increasing of this ratio, increase the fatigue life. The orientation of the circular notch and crack affect the fatigue crack growth. The delay phenomenon is characterized by the presence crack closure phenomenon when closure model is applied. The same effect for the two orientations is signaled en presence for the delay.

Reference

- [1] Hoepfner, D.W. (1996): “*Industrial Significance of Fatigue Problems*”, ASM Handbook, Fatigue and Fracture, 19, p 1.
- [2] Paris, P.C., Gomez M.P., Anderson W.O.P. (1961): “A rational analytic theory of fatigue”. *The Trend Eng*, 13; pp 9-14.
- [3] Jones R, Molent L, Pitt S, Siores E., (2006): “*Recent developments in fatigue crack growth*”. In: Gdoutos EE, editor. Proceedings of the 16th European conference on fracture, failure analysis of nano and engineering materials and structures, July 3–7. Alexandroupolis, Greece.