27-28 August 2019:

Characterizing Elastomer Fatigue Behavior for Analysis and Engineering

Elastomers are outstanding in their ability to repeatedly endure large deformations, and they are often applied where fatigue performance is critical. Their macromolecular structure gives rise to unique behaviors, and so appropriately specialized experimental methods are needed to characterize, analyze, and design for durability. This 2-day course will give you powerful approaches to anticipate, diagnose and solve fatigue-related issues.

Course Objectives

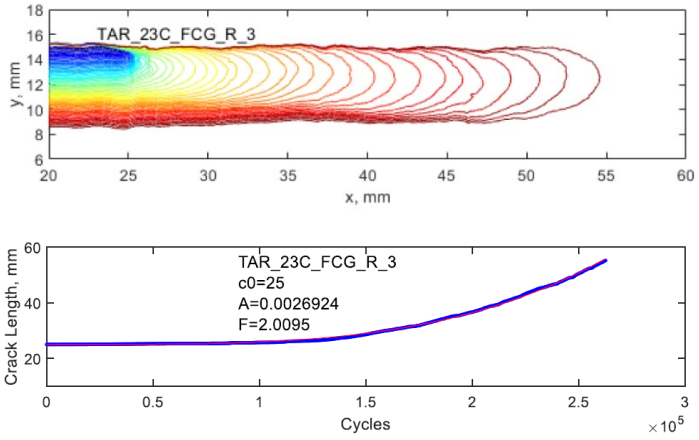
- Know the physics and factors that govern rubber's fatigue behavior
- Use accurate models and efficient procedures to characterize fatigue behavior
- Take advantage of test strategies that minimize measurement risks and maximize productivity
- Use crack nucleation and fracture mechanics approaches effectively
- Use characterization to inform accurate fatigue calculations
- Use characterization to diagnose and solve development issues

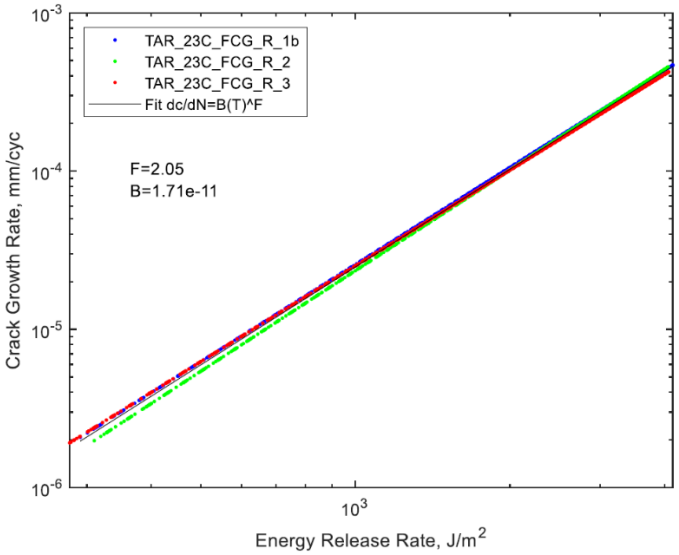
Format

The course includes lectures, lab demos, and hands-on exercises focused on processing and interpreting experimental measurements of fatigue behavior. Lunch and snacks included, as well as dinner on Day 1.

Instructor

Dr. Will Mars is an international authority on damage mechanics in elastomers. He brings two decades of experience developing product testing and simulation methods in the rubber industry. He is the editor of *Rubber Chemistry & Technology*.





Agenda

Day 1: 8:30 – 4:45 pm, 6 pm Course Dinner

- Elastomers as engineered materials
- Stress-strain experiments for FEA
- Fatigue testing basics – principles and strategy
- Critical Tearing Energy / Strength
- The fatigue threshold / Intrinsic Strength
- Characterizing fully relaxing fatigue behavior
- Characterizing nonrelaxing fatigue behavior and strain crystallization

Day 2: 8:30 – 4:45 pm

- Characterizing crack precursor size
- Crack nucleation, S-N curves, Continuum Damage
- Fatigue in tension, shear, and compression
- Rubber's fatigue design envelope
- Characterizing cyclic softening
- Characterizing thermal effects
- Characterizing thermochemical aging

PRICE - £1000 plus VAT

Course Location: Rubber Consultants
Tun Abdul Razak Research Centre
Brickendonbury, Hertford
United Kingdom, SG13 8NL