

## 29-30 August: Rubber Compounding for Durability

Are you challenged to make your rubber products last longer? Rubber compounds are complex mixtures of polymers, reinforcing fillers, oils / plasticizers, curatives, stabilizers, and other additives that are combined in relatively quick mixing processes. Durability is impacted by all these ingredients, their interactions, and the quality of the mixing. This one-day course will teach compounding strategies to improve the strength and lifetime of rubber components. This specialized training will benefit materials engineers, compounders, rubber chemists, product development engineers, R&D scientists, and rubber lab managers at manufacturers of tires and rubber parts and companies that supply raw materials.

### Course Objectives

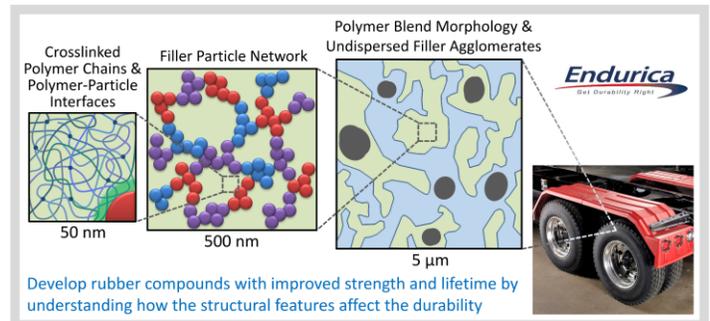
- Understand how rubber fatigue and failure characteristics are influenced by materials selection and compound structural features
- Learn compounding strategies to improve strength and fatigue lifetime
- Know the right testing methods to characterize rubber durability efficiently in the lab

### Format

The course includes lectures and classroom exercises focused on understanding fatigue behavior of rubber and developing compounding approaches to improve durability. Lunch and snacks are included.

### Instructor

Dr. Chris Robertson is an international authority on polymer science and rubber compounding for performance. He brings over 15 years of materials research and product development experience at tire and rubber companies and raw materials suppliers. Chris is co-inventor of 32 patents, co-author of 55 publications in peer-reviewed journals, and serves as Associate Editor of *Rubber Chemistry & Technology*.



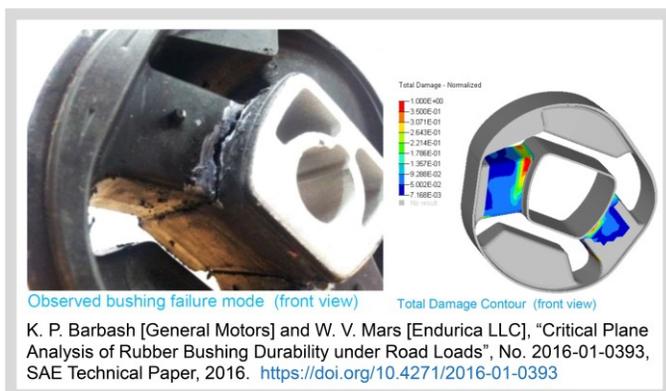
### Agenda

Day 1: 8:30 am – 4:30 pm

- Introduction: What types of failure are manifested in your products, and what is durability worth to you?
- Brief overview of rubber formulations and mixing approaches
- Testing for durability in the rubber lab: Focus on efficient testing of crack nucleation and crack growth
- Framework for compounding for durability
- Polymer selection: Chemical stability, strain-induced crystallization, molecular mobility, polymer blends
- Crosslinking effects: Effects of type, density, and distribution of crosslinks

Day 2: 8:30 am – 4:30 pm

- Filler type, dispersion, and reinforcement topics, including processing effects and crack precursors
- Stiffness and deformation control mode
- Influence of oils, plasticizers, and resins
- Stabilizing against aging
- Simulation for materials selection and durability prediction
- Wrap-up discussions, final Q&A



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

**Price:** £1000