

# 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

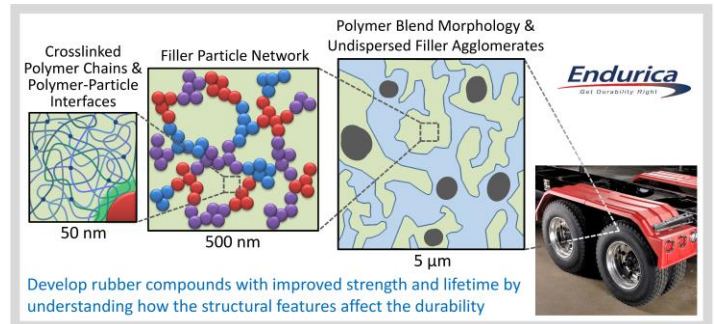
- Understand how rubber fatigue and failure characteristics are influenced by materials selection and compound structural features
- Learn compounding strategies to improve strength and fatigue lifetime
- Know the right testing methods to characterize rubber durability efficiently in the lab

## 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

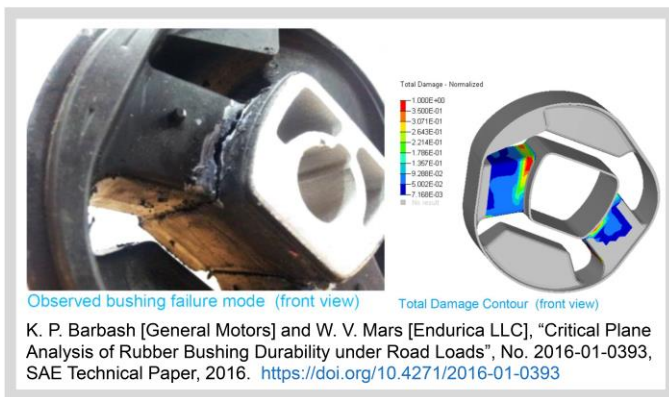
Dr. Chris Robertson is an international authority on polymer science and rubber compounding for performance. He brings over 15 years of materials research and product development experience at tire and rubber companies and raw materials suppliers. Chris is co-inventor of 32 patents, co-author of 55 publications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



## Agenda

One-Day Course: 8:30 am – 4:30 pm

- What types of failure are manifested in your products, and what is durability worth to you?
- Compound stiffness and deformation control mode in rubber applications
- Overview of durability testing methods in the rubber laboratory
- Basics of rubber formulations and mixing approaches
- Polymer selection: chemical stability, strain-induced crystallization, molecular mobility, polymer blends
- Effects of type, density, and distribution of crosslinks
- Filler type, dispersion, and reinforcement topics, including processing effects and crack precursors
- The fatigue threshold and how to increase through compounding
- Mechanisms of aging / degradation and formulation approaches for suppressing
- Hysteresis: Help or hindrance?
- Simulation for materials selection and durability prediction





## Registration Form: **Rubber Compounding for Durability**

Course Date: **February 6, 2019**

Course Location: **Argen Polymer LLC**

**17645 Telge Road, Cypress, TX 77429**

Price: \$860 \*

\*for registrations received prior to 14 days prior to course date. Registration after this date incurs a late fee of \$250.

To Register ONLINE, go to [www.endurica.com/training](http://www.endurica.com/training).

OR you can mail, fax or e-mail this form to:

Attention: Joe Suter,

[jasuter@endurica.com](mailto:jasuter@endurica.com)

Fax: 567-429-7034

Phone: 419-957-0543 x707

Endurica LLC

1219 West Main Cross, Suite 201

Findlay, Ohio 45840

Name \_\_\_\_\_

Company Name \_\_\_\_\_

Street Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Work Phone \_\_\_\_\_

Email \_\_\_\_\_

Any food or other preferences (vegetarian?) \_\_\_\_\_

Payment Method:

PO No. \_\_\_\_\_ Credit Card Type:  VISA  MasterCard

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Or, write a check payable to Endurica LLC.

Endurica LLC reserves the right to cancel a scheduled training course if the minimum class size is not met. In the event of a cancellation, Endurica LLC will make every attempt to notify registered participants within five working days. Payment made for a canceled course will be refunded in full or applied to another scheduled training course.

Participant cancellations must be received at least 10 working days in advance. Registrations canceled by participants less than 10 working days before the training course begins are subject to a 50% cancellation charge. For cancellations occurring on the first day of a scheduled training course, and for "no shows," the full tuition fee is non-refundable.

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