

## Expanding Your Materials Horizons

Roger W. Pryor\*, Ph.D., COMSOL Certified Consultant  
Pryor Knowledge Systems, Inc.

\*Corresponding author: 4918 Malibu Drive, Bloomfield Hills, MI, 48302-2253, rwpryor@pksez1.com

### Introduction

Materials and their related properties are intrinsically fundamental to the creation, development and solution of viable exploratory models when using numerical analysis software. In many cases, simply determining the location, availability and relative accuracy of the necessary material parameters for the physical behavior of even commonly employed design materials can be very difficult and time consuming.

### Use of COMSOL Multiphysics

This paper explores the opportunities available through the use of COMSOL Multiphysics software and currently available third-party materials properties data sources {1} to expand the modeling horizons of COMSOL Multiphysics modelers. This paper will discuss methodology and techniques for materials properties data location, acquisition and incorporation into COMSOL models. This paper will also explore the availability and incorporation into COMSOL Multiphysics of new physical material properties parameters that expand the usability of the current intrinsic capabilities of COMSOL Multiphysics software.

### Reference

1. Roger W. Pryor, Chapter 2, **Multiphysics Modeling Using COMSOL**, October 2009, Jones and Bartlett Publishers, Sudbury, MA, ISBN 9780763779993.