Título:

Autor: **Precio:** $499.38

Editorial: **Año:** 2009

Tema: **Edición:** 1ª

Sinopsis   **ISBN:** 9780387876825

This book gives a user friendly tutorial to Fronts in Random Media, an interdisciplinary research topic, to senior undergraduates and graduate students in the mathematical sciences, physical sciences and engineering.

Fronts or interface motion occur in a wide range of scientific areas where the physical and chemical laws are expressed in terms of differential equations. Heterogeneities are always present in natural environments: fluid convection in combustion, porous structures, noise effects in material manufacturing to name a few.

Stochastic models hence become natural due to the often lack of complete data in applications.

The transition from seeking deterministic solutions to stochastic solutions is both a conceptual change of thinking and a technical change of tools. The book explains ideas and results systematically in a motivating manner. It covers multi-scale and random fronts in three fundamental equations (Burgers, Hamilton-Jacobi, and reaction-diffusion-advection equations) and explores their connections and mechanical analogies. It discusses representation formulas, Laplace methods, homogenization, ergodic theory, central limit theorems, large-deviation principles, variational and maximum principles.

It shows how to combine these tools to solve concrete problems.

Students and researchers will find the step by step approach and the open problems in the book particularly useful.