This book is a comprehensive, theoretical, practical, and thorough guide to XAFS spectroscopy. The book addresses XAFS fundamentals such as experiments, theory and data analysis, advanced XAFS methods such as operando XAFS, time-resolved XAFS, spatially resolved XAFS, total-reflection XAFS, high energy resolution XAFS, and practical applications to a variety of catalysts, nanomaterials and surfaces. This book is accessible to a broad audience in academia and industry, and will be a useful guide for researchers entering the subject and graduate students in a wide variety of disciplines.