

# Preface

The concept of wireless information and power transfer provides researchers with a unique set of challenges which is quite distinct from their traditional fixed power supply. New approaches in, wireless power transmission (or transfer) (WPT) is paramount as it helps us to overcome the scarcity of electric power when electric power is supplied wirelessly.

The necessities of communication systems are a burgeoning issue that is already straining operating budgets and attracting the attention of policymakers around the globe. Communication technologies continue to be a central element of the transition to smart, energy-efficient and sustainable lifestyles. Radio frequency (RF) energy transfer and harvesting techniques have recently become alternative methods to power next-generation wireless networks. This book features the latest research findings in the area of wireless energy harvesting through RF wireless power transfer and simultaneous information and power transfer in light of the emerging area of the Internet of Things.

All living and machine entities rely on both information and power for their existence. Although these two entities work harmoniously, in traditional engineering design; information and power are handled by separate systems with limited interaction. Indeed, wireless energy harvesting (WEH) through radio waves has already found various applications (such as the radiofrequency identification (RFID) technology, healthcare monitoring, etc.), but radio wave-based communication and power transfer have largely been designed separately. The contributions in this book aim at achieving a breakthrough in the design of WPT networks whilst delivering simultaneously high quality to this rapidly evolving area. This book brings together the latest findings in wireless information and power transfer in order to disseminate state-of-the-art results and inspire future research in this field. This introduces a new paradigm of green communications.

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