



# Waves in Metamaterials

*By Laszlo Solymar, Ekaterina Shamounina*

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Metamaterials is a young subject born in the 21st century. It is concerned with artificial materials which can have electrical and magnetic properties difficult or impossible to find in nature. The building blocks in most cases are resonant elements much smaller than the wavelength of the electromagnetic wave. The book offers a comprehensive treatment of all aspects of research in this field at a level that should appeal to final year undergraduates in physics or in electrical and electronic engineering. The mathematics is kept at a minimum; the aim is to explain the physics in simple terms and enumerate the major advances. It can be profitably read by graduate and post-graduate students in order to find out what has been done in the field outside their speciality, and by experts who may gain new insight about the inter-relationship of the physical phenomena involved.

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## **Waves in Metamaterials** By Laszlo Solymar, Ekaterina Shamoina Bibliography

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## **Editorial Review**

### **Review**

`A book of good style and readability in an emerging field in electromagnetism that can be made accessible to undergraduate students.' Ricardo Marques, University of Sevilla

`Certainly the book I would recommend to my students who are entering this burgeoning research field. The metamaterials community is growing, and I am sure that this will become a popular book with a considerable life span.' Nikolay Zheludev, University of Southampton

### **About the Author**

#### **Laszlo Solymar**

Senior Research Fellow and Visiting Professor, Department of Electrical and Electronic Engineering  
Imperial College, London.

Laszlo Solymar was born in 1930 in Budapest. He is Emeritus Professor of Applied Electromagnetism at the University of Oxford and Visiting Professor and Senior Research Fellow at Imperial College, London. He graduated from the Technical University of Budapest in 1952 and received the equivalent of a Ph.D in 1956 from the Hungarian Academy of Sciences. In 1956 he settled in England where he worked first in industry and later at the University of Oxford. He did research on antennas, microwaves, superconductors, holographic

gratings, photorefractive materials, and metamaterials. He has held visiting professorships at the Universities of Paris, Copenhagen, Osnabrück, Berlin, Madrid and Budapest. He published 8 books and over 250 papers. He has been a Fellow of the Royal Society since 1995. He received the Faraday Medal of the Institution of Electrical Engineers in 1992.

#### **Ekaterina Shamonina**

Emmy Noether Fellow of the German Research Council, University of Erlangen  
Erlangen, Germany

Ekaterina Shamonina was born in 1970 in Tver, Russia and graduated in 1993 in Physics at the Moscow State University. She received her doctorate in 1998 from the University of Osnabrück, Germany. She was a visiting

scientist at the University of Campinas, Brazil in 1996 and 1998. In 2000 she was awarded the Emmy Noether Fellowship from the German Research Council (Deutsche Forschungsgemeinschaft). She spent the first leg of the Fellowship, 2000-2002 at the University of Oxford. After further six months at Imperial College, London she returned to the University of Osnabrück where she built up a research group working on Metamaterials. Her main research areas apart from Metamaterials have been amorphous semiconductors, photorefractive materials and antennas. She published over 50 research papers. She and was awarded the Hertha-Sponer Prize 2006 of the German Physical Society.

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