

**ELECTROMAGNETIC WAVES MONOGRAPH SERIES**  
**on Progress In Electromagnetics Research (PIER)**

**Chief Editor:** J. A. Kong, *26-305, MIT, Cambridge, MA 02139, USA*

**Production Editors:** C. Ao, T. M. Grzegorzczuk, B.-I. Wu

**Editors and Reviewer Board:**

S. Adachi	R. F. Harrington	R. K. Moore
E. Altshuler	R. L. Haupt	M. A. Morgan
J. B. Andersen	S. He	J. R. Mosig
K. G. Balmain	A. Ishimaru	B. Munk
R. Bansal	J. R. James	D. P. Nyquist
F. Bardati	R. H. Jansen	H. Öttl
A. Boag	J. M. Jin	P. Pampaloni
J. C. Bolomey	J. T. Johnson	A. Priou
H. Braunsch	A. Jordan	E. J. Rothwell
C. Elachi	D. Kaklamani	J. Saillard
A. C. Cangellaris	R. Kastner	T. K. Sarkar
Z. Cendes	R. W. P. King	A. H. Sihvola
D. Censor	S. G. Kristensson	S. Strom
W. C. Chew	R. H. Lang	W. Tabbara
S. Cloude	R. Q. Lee	H. S. Tan
R. E. Collin	Y. Leroy	S. Y. Tan
A. T. de Hoop	D. Lesselier	V. I. Tatarskii
A. Z. Elsherbeni	Y. Leviatan	S. A. Tretyakov
N. Engheta	L. W. Li	L. Tsang
L. B. Felsen	W. Lin	P. Ya. Ufimtsev
J. Fikioris	I. V. Lindell	N. K. Uzunoglu
A. K. Fung	H. Ling	J. L. Volakis
F. E. Gardiol	Y. T. Lo	J. C. West
J. Gavan	S. F. Mahmoud	E. Wolf
T. Habashy	R. J. Mailloux	E. Yablonovitch
T. Hagfors	D. Maystre	A. D. Yaghjian
S. Hagness	R. C. McPhedran	W. Y. Yin
J. E. Hansen	S. Mizushima	W. X. Zhang

## MANUSCRIPT SUBMISSIONS

**Progress In Electromagnetics Research (PIER)** publishes comprehensive articles on all aspects of theory and applications of electromagnetics. Manuscripts submitted to PIER should be original and must not have been submitted simultaneously to other journals. Authors are solely responsible for the factual accuracy of their articles, and all articles are understood to have received clearance(s) for publication.

Manuscripts must be in English and should be numbered beginning with the title page. The first page should contain only the title of the paper, name(s) and address(es) of the authors, and the name and address of the author to whom correspondence and proofs should be sent. Headings and subheadings of the paper (e.g., Abstract, Introduction, Formulation, Methods, Results, Discussion, Conclusion) should be clearly indicated. Detailed mathematical discussions should be placed in an appendix. Tables and figures should have captions. References must contain full title, place and year of publication, and be listed at the end of the article in the reference section. Technical reports, memos, unpublished or to be published articles must not be listed as references, only published work in journals and books may be cited as references.

Submitted manuscript (<http://emacademy.org/pier>) must contain all items in the following checklist:

- (1) Source file(s) of the manuscript;
- (2) A pdf version of the manuscript;
- (3) Source files of all the figures;
- (4) A short biography (5 – 10 lines) for each author.

No action will be taken unless we have all the above listed items on file. All submitted material will not be returned whether the manuscript is accepted or not. Submit all articles to

Chief Editor, Dr. J. A. Kong  
Room 26-305, 77 Massachusetts Avenue  
Cambridge, MA 02139, USA  
Fax: 617-258-8766 Email: [jpier@ewt.mit.edu](mailto:jpier@ewt.mit.edu)

**PIER 1**

**Progress In Electromagnetics Research**

J. A. Kong

**PIER 2**

**Finite Element and Finite Difference Methods in Electromagnetic Scattering**

M. A. Morgan

**PIER 3**

**Polarimetric Remote Sensing**

J. A. Kong

**PIER 4**

**Progress In Electromagnetics Research**

J. A. Kong

**PIER 5**

**Application of Conjugate Gradient Method to Electromagnetics and Signal Analysis**

T. K. Sarkar

**PIER 6**

**Dielectric Properties of Heterogeneous Materials**

A. Priou

**PIER 7**

**Computational Electromagnetics and Supercomputer Architecture**

T. Cwik and J. Patterson

**PIER 8**

**Progress In Electromagnetics Research**

J. A. Kong

**PIER 9**

**Bianisotropic and Bi-isotropic Media and Applications**

A. Priou

**PIER 10**

**Methods for Modeling and Simulation of Guided-Wave Optoelectronic Devices: Part I: Modes and Couplings**

W. Huang

**PIER 11**

**Methods for Modeling and Simulation of Guided-Wave Optoelectronic Devices: Part II: Waves and Interactions**

W. Huang

**PIER 12**

**Progress In Electromagnetics Research**

J. A. Kong

**PIER 13**

**Electromagnetic Theory and Network Methods**

M. Tateiba and L. Tsang

**PIER 14**

**Electromagnetic Scattering by Rough Surfaces and Random Media**

M. Tateiba and L. Tsang

**PIER 15**

**Progress In Electromagnetics Research**

J. A. Kong

**PIER 16**

**Progress In Electromagnetics Research**

J. A. Kong

**PIER 17**

**Progress In Electromagnetics Research**

J. A. Kong

**PIER 18**

**Progress In Electromagnetics Research**

J. A. Kong

**PIER 19**

**Progress In Electromagnetics Research**

J. A. Kong

**PIER 20**  
**Progress In Electromagnetics Research**  
J. A. Kong

**PIER 21**  
**Progress In Electromagnetics Research**  
J. A. Kong

**PIER 22**  
**Progress In Electromagnetics Research**  
J. A. Kong

**PIER 23**  
**Progress In Electromagnetics Research**  
J. A. Kong

**PIER 24**  
**Progress In Electromagnetics Research**  
J. A. Kong

**PIER 25**  
**Progress In Electromagnetics Research**  
J. A. Kong

**PIER 26**  
**Progress In Electromagnetics Research**  
J. A. Kong

**PIER 27**  
**Progress In Electromagnetics Research**  
J. A. Kong

**PIER 28**  
**Progress In Electromagnetics Research**  
J. A. Kong

**PIER 29**  
**Progress In Electromagnetics Research**  
J. A. Kong

**PIER 30**  
**Progress In Electromagnetics Research**  
J. A. Kong

**PIER 31**

**Progress In Electromagnetics Research**

J. A. Kong

**PIER 32**

**Progress In Electromagnetics Research**

J. A. Kong

**PIER 33**

**Progress In Electromagnetics Research**

J. A. Kong

**PIER 34**

**Progress In Electromagnetics Research**

J. A. Kong

**PIER 35**

**Progress In Electromagnetics Research**

J. A. Kong

**PIER 36**

**Progress In Electromagnetics Research**

J. A. Kong

**PIER 37**

**Polarimetric Microwave Remote Sensing of Wind-Driven  
Ocean Environment**

Y. Zhang and T. M. Grzegorzcyk

**PIER 38**

**Progress In Electromagnetics Research**

J. A. Kong

**PIER 39**

**Progress In Electromagnetics Research**

J. A. Kong

**PIER 40**

**Progress In Electromagnetics Research**

J. A. Kong

**PIER 41**

**Electromagnetic Applications of Photonic Band Gap  
Materials and Structures**

A. Priou and T. Itoh

**PIER 42**  
**Progress In Electromagnetics Research**  
J. A. Kong

**PIER 43**  
**Progress In Electromagnetics Research**  
J. A. Kong

**PIER 44**  
**Progress In Electromagnetics Research**  
J. A. Kong

**PIER 45**  
**Progress In Electromagnetics Research**  
J. A. Kong

**PIER 46**  
**Progress In Electromagnetics Research**  
J. A. Kong

**PIER 47**  
**Progress In Electromagnetics Research**  
J. A. Kong

**PIER 48**  
**Progress In Electromagnetics Research**  
J. A. Kong

**PIER 49**  
**Progress In Electromagnetics Research**  
J. A. Kong

**PIER 50**  
**Progress In Electromagnetics Research**  
J. A. Kong

**PIER 51**  
**Metamaterials Exhibiting Left-Handed Properties and  
Negative Refraction**  
T. M. Grzegorzcyk

**PIER 52**  
**Progress In Electromagnetics Research**  
J. A. Kong

**PIER 53**  
**Progress In Electromagnetics Research**  
J. A. Kong

**PIER 54**  
**Progress In Electromagnetics Research**  
J. A. Kong

**PIER 55**  
**Progress In Electromagnetics Research**  
J. A. Kong