

Recent Book on Finite Element Methods for Electromagnetics, published by Morgan and Claypool Publishers.

The book is available in electronic (downloadable) form for \$30, in paperback (ISBN 1598290800) or in print paperback version.

Book Title: FREQUENCY DOMAIN HYBRID FINITE ELEMENT METHODS FOR ELECTROMAGNETICS

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Book Abstract: This book provides a brief overview of the popular Finite Element Method (FEM) and its hybrid versions for electromagnetics with applications to radar scattering, antennas and arrays, guided structures, microwave components, frequency selective surfaces, periodic media, and RF materials characterizations and related topics. It starts by presenting concepts based on Hilbert and Sobolev spaces as well as *Curl* and *Divergence* spaces for generating matrices, useful in all engineering simulation methods. It then proceeds to present applications of the finite element and finite element-boundary integral methods for scattering and radiation. Applications to periodic media, metamaterials and bandgap structures are also included. The hybrid volume integral equation method for high contrast dielectrics and is presented for the first time. Another unique feature of the book is the inclusion of design optimization techniques and their integration within commercial numerical analysis packages for shape and material design. To aid the reader with the method's utility, an entire chapter is devoted to two-dimensional problems. The book can be considered as an update on the latest developments since the publication of our earlier book (*Finite Element Method for Electromagnetics*, IEEE Press, 1998). The latter is certainly complementary companion to this one.

