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**Michael S Vogelius\***, Rutgers University, Department of Mathematics, 110 Frelinghuysen Road, Piscataway, NJ 08854. *Electromagnetic imaging—An applied analyst’s perspective.*

The term electromagnetic imaging is used to describe methods that determine internal constitutive properties of an object based on boundary measurements of electric and magnetic fields.

After a very brief survey of some fundamental uniqueness and continuous dependence results for the problem of ”general purpose” electromagnetic imaging I will turn the attention to very effective methods that have recently been developed to determine unknown, low volume features inside an otherwise known object.

In describing the mathematical tools, used to develop these methods, I shall place particular emphasis on a part that is shared with the theory of effective media (homogenization). Even though most of the work has been done at zero or low frequency, I shall also explain how the ideas behind these methods, by a combination with ideas from geometric optics, may be applied to large frequency measurements. (Received June 02, 2005)