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Trung T. Truong* (trungt@ksu.edu) and **Dinh-Liem Nguyen** (dlnghuyen@ksu.edu). *Imaging of bi-anisotropic periodic structures from electromagnetic near field data.*

Inverse scattering problems for three-dimensional bi-anisotropic periodic structures governed by the full Maxwell equation have various applications, especially in the study of photonic crystals. However, most of the existing works are concerned with the case of isotropic structures. Also, the presence of three matrix-valued coefficients that characterize physical properties of the bi-anisotropic periodic scatterers makes it challenging to reconstruct all the information about the structures. Moreover, inverse problems involving periodic structures are known to be highly ill-posed. In this talk, we provide a rigorous justification of the Factorization method for the shape reconstruction of such structures as well as numerical examples to show efficiency of the method as a numerical tool to solve the inverse problem. (Received January 11, 2021)