Abstracts

General analytical solutions of static Green's functions for shielded and open arbitrarily multilayered media

In this paper, we present for the first time general analytical solutions of the static Green's functions for shielded and open arbitrarily multilayered media. The analytical formulas for the static Green's functions, which are expressed in the form of the Fourier series or the Fourier integrals, have simple form and are applicable to arbitrary number of the dielectric layers. The derivation of the formulas is primarily based on a technique by which a recurrence relation between L layers and L+1 layers is developed. Green's functions for a three-layered dielectric structure are given as an example of the general formulas. These general analytical solutions will provide a new and efficient tool to the analysis of the multilayered medium structures.