

## **Electromagnetic surface modes of multilayer stacks: distinction between guided modes and surface form polaritons**

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Previous studies have proved that the termination of a periodic multilayer influences its surface waves [1, 2]. For instance, these modes exist even if the final layer is complete or incomplete, referring respectively to Shockley [3] and Tamm [4] modes in solid state physics.

A careful study of the dependence of the surface modes' dispersion following the termination of multilayer stacks shows particular aspects. For stratified media with high refractive index layers, surface modes can cross the continuum of with increasing thickness of the last layer. The crossing allows us to distinguish between guided modes and so-called "surface form polaritons". The first modes do not depend on the periodic structure. The electromagnetic energy is mostly localized in the final layer. On the other hand, surface form polaritons split at each side of the photonic band. Field maps reveal modes which have an evanescent profile on several periods of the structure. These modes are called surface form polaritons in order to stress on their origin which is the stacking of layers.

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