

## EM Field Engineering with Surface Plasmon and Spoof Surface Plasmons: from mid-IR to THz

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Metamaterials have opened up a new dimension in EM field engineering. Here we present new applications to laser physics ranging from the achievement of mid-ir quantum cascade lasers emitting multiple collimated beams in different directions to spoof-surface Plasmon structures that have been used to dramatically increase the confinement of THz waves to surfaces. The latter has enabled the demonstration for the first time of highly directional edge emitting THz lasers with high power throughput.