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## 【244】 Hybrid plasmon-phonon surface modes at CdZnO-sapphire interfaces: Grating coupling and applications

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Recently, CdO has been proposed as a very promising material for IR plasmonics due to its high plasma frequency and low damping. However, low propagation lengths and broad minima are common limitations with CdO surface plasmons.

To overcome these limitations, we propose the use of thin high quality crystalline CdZnO layers grown on sapphire substrate. Hybrid surface modes arise from the interaction between the high energy phonons of the sapphire and CdZnO surface plasmons. Here, we design and realize gold gratings to such CdZnO layers and successfully couple mid-IR light with these hybrid modes and discuss their potential applications.

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