Nonreciprocal light transmission based on the thermal radiative effect - DTU Orbit
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Nonreciprocal light transmission is critical in building optical isolations and circulations in optical communication systems. Achieving high optical isolation and broad bandwidth with CMOS-compatibility are still difficult in silicon nano-photonics. Here we first experimentally demonstrate that the fiber-chip-fiber optomechanical structure, which is based on the thermal radiative effect, is effective at achieving a broad operation bandwidth of 24 nm and an ultra-high nonreciprocal transmission ratio up to 63 dB. These satisfactory nonreciprocal performances can mostly be attributed to the significant characteristics of the thermal radiative effect, which could cause a fiber displacement up to tens of microns. This powerful thermal radiative effect opens up a new opportunity for nonreciprocal light transmission which is promising to be used in complete on-chip nonreciprocal devices in the future.

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