

Te-Ge-Se films: Elaboration by thermal co-evaporation, characterization and use for the manufacture of IR integrated optics components, basic elements of CO₂ optical microsensors

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Films in a wide range of compositions in the Te-Ge-Se ternary system were prepared by thermal co-evaporation. The evolution of optical and thermal properties versus the composition have been used to determine a particular area of composition which is interesting for manufacturing waveguides being able to operate from 1 to about 17 microns.

Straight and curved RIB waveguides as well as Y-junctions based on these compositions were fabricated by using laser lithography and ion beam etching. Propagation losses of straight RIB waveguides were estimated to be around 1 dB.cm⁻¹ at $\lambda = 1.55 \mu\text{m}$. All the curved RIB waveguides were highlighted to be operational, independently of their curve radius and angle. Finally, the Y-junctions were shown to operate at a satisfying power division.

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