Disain gallium nitride based Y- junction power splitter = The design of gallium nitride based Y-junction power splitter / Kurniawan Banumaxs Naga

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Abstrak

[Skripsi ini membahas tentang disain 3 dB Y-junction Power Splitter berbasis GaN/Al2O3 (Sapphire) untuk konfigurasi rib dan ridge waveguide. Disain dilakukan menggunakan perangkat lunak OptiBPM 12 free trial. Dari hasil simulasi dengan kriteria single mode ditunjukan bahwa Y-junction Power Splitter terbaik, yaitu low loss dan distribusi medan optik yang uniform, diperoleh saat sudut antara dua cabang 0,1o, pada posisi pandu gelombang 0,8 μm di atas sapphire (untuk rib waveguide) dan 0,55 μm di atas sapphire (untuk ridge waveguide), untuk lebar dan ketebalan pandu gelombang berturut-turut 3,1 μm dan >0,8 μm, ketebalan buffer layer 0,55 μm, serta indeks bias dan ketebalan material cladding sebesar 2,12 dan 8,8 μm., In this final project, I’m designing GaN/Al2O3 (Sapphire) based 3 dB Y-junction Power Splitter. There are two configurations used in the simulation, which are rib waveguide and ridge waveguide. Based on the data acquired for single mode criteria, the optimal design, which is low loss and uniform optical distribution, is achieved by adjusting the angle of Y-junction to 0.1o with the position of waveguide is 0.8 μm above the sapphire (rib waveguide) and 0.55 μm above the sapphire (ridge waveguide) for the width and thickness of waveguide consecutively are 3.1 μm and more than 0.8 μm, the thickness of buffer layer used is 0.55 μm while the refractive index and the thickness of cladding used are 2.12 and 8.8 μm.]