Silica ridge waveguides design

April 06th 2023

Zoom Meeting

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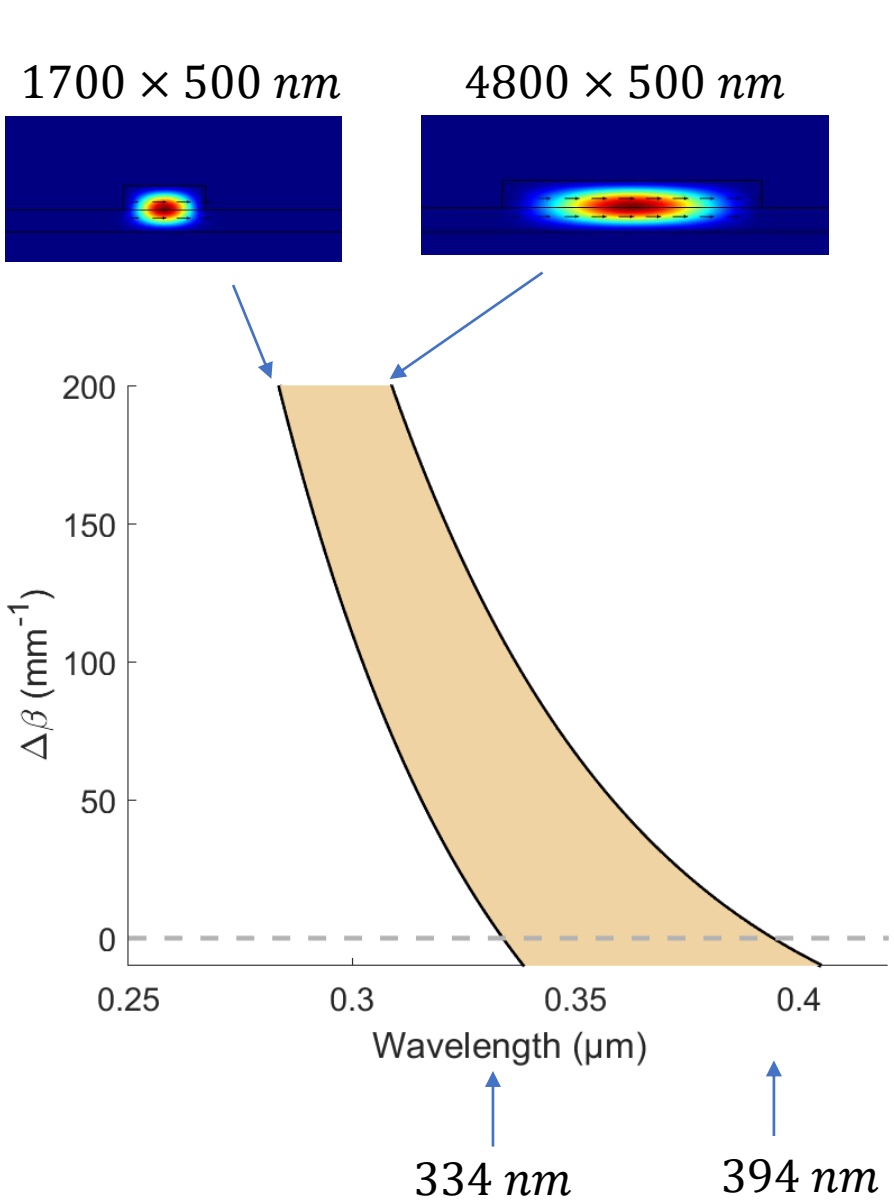
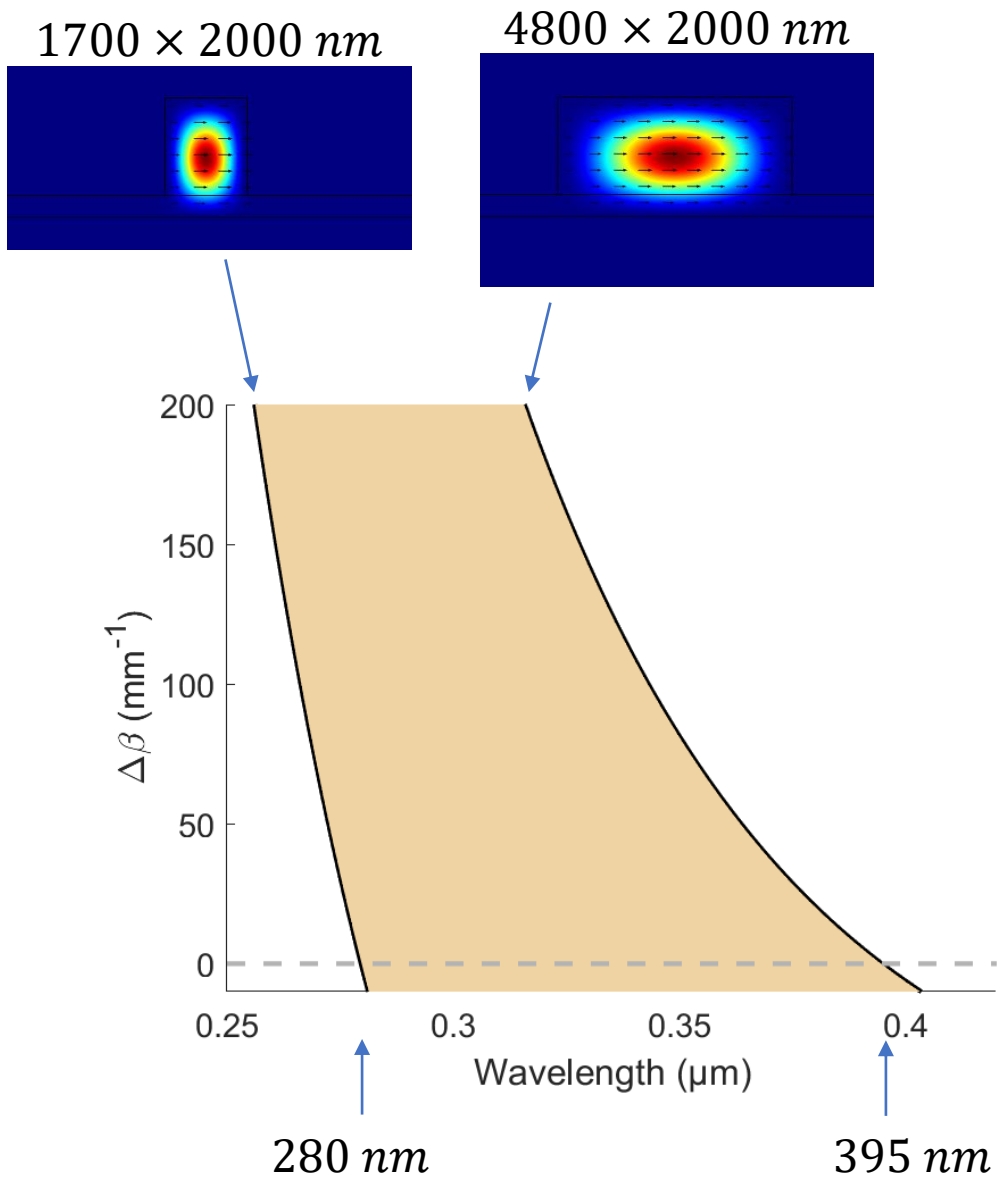
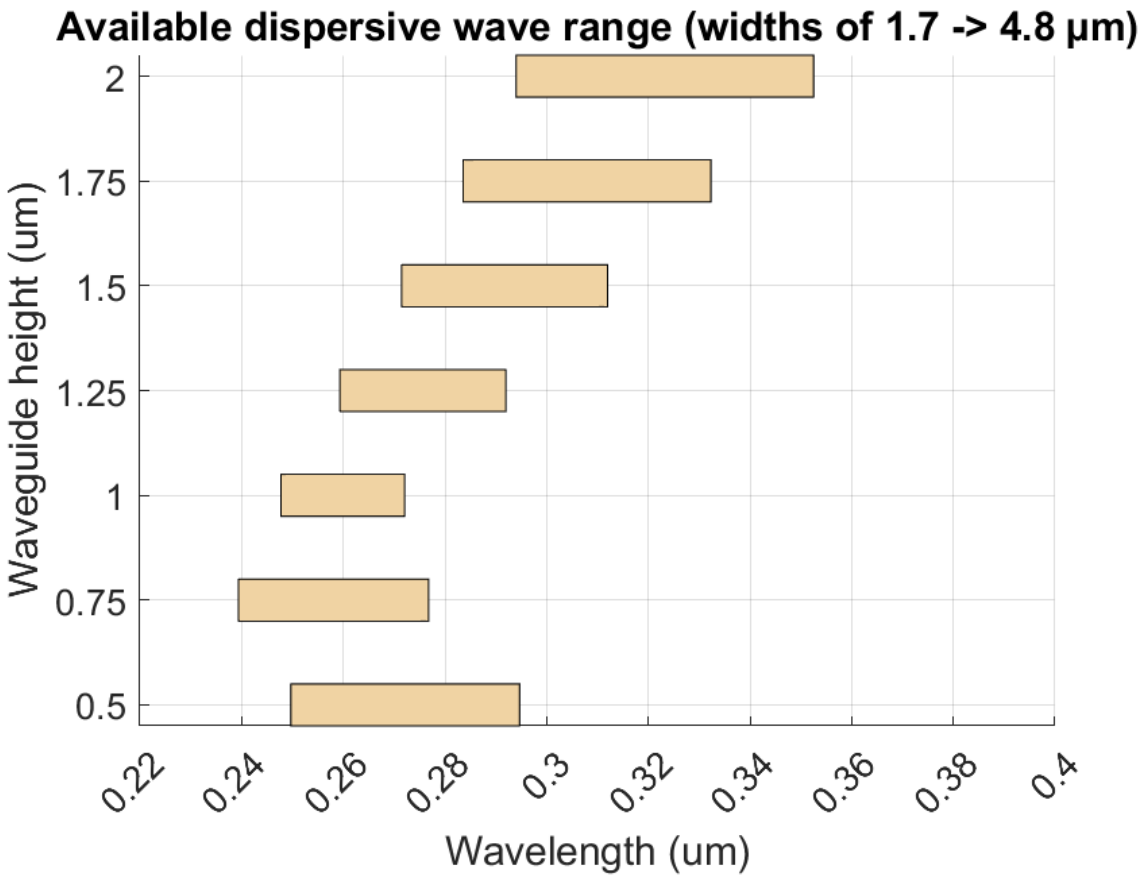
SiO2 ridge rectangular waveguides



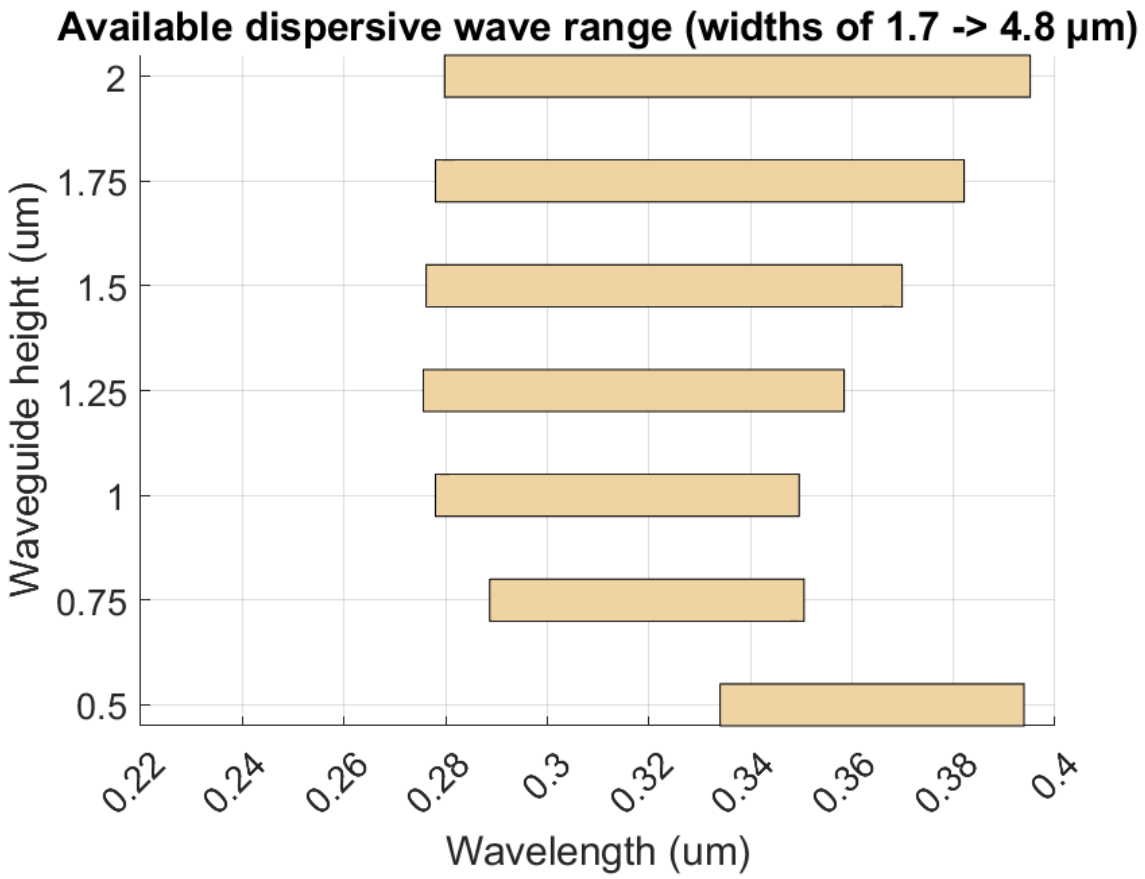


SiO2 ridge rectangular waveguides

TM mode

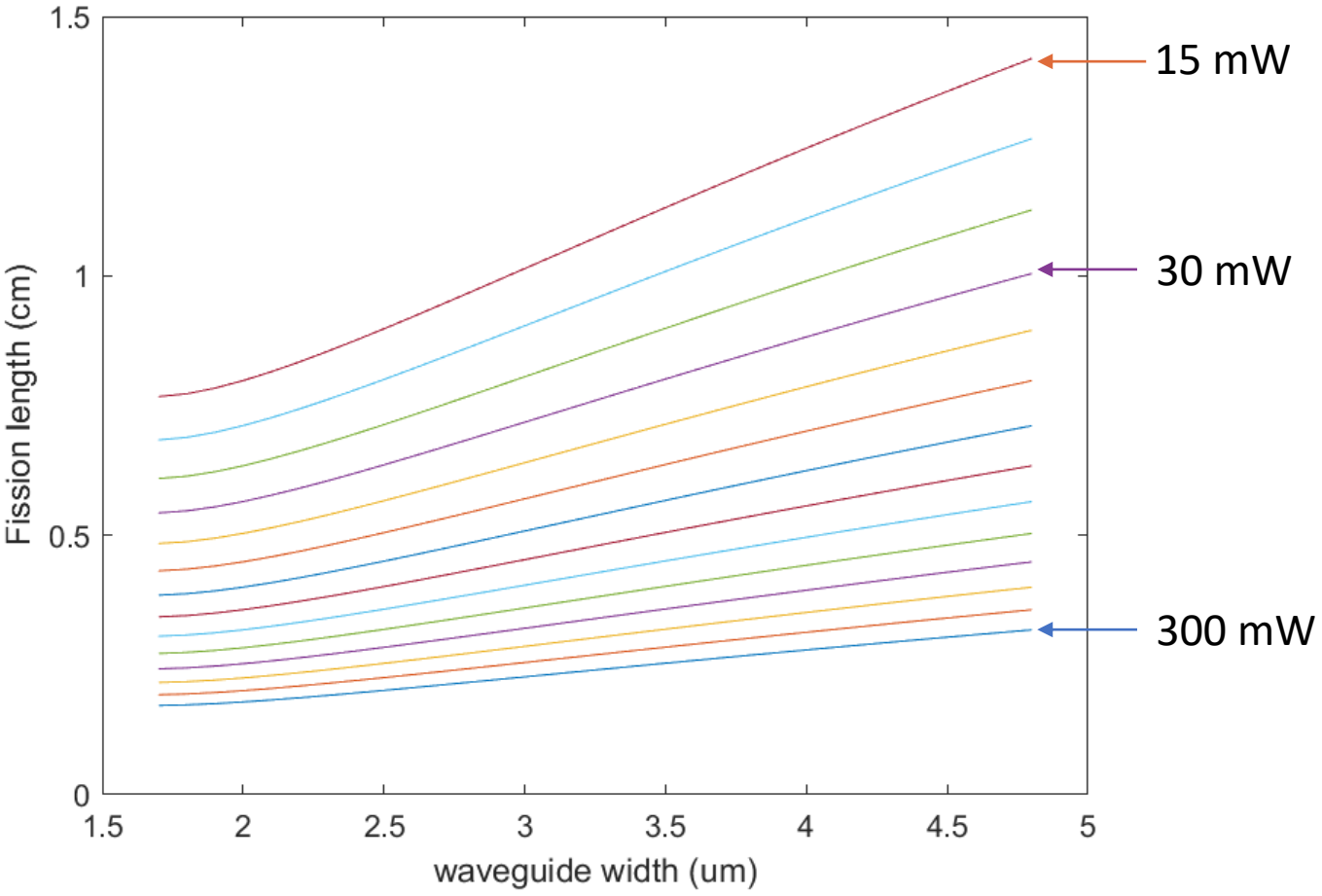


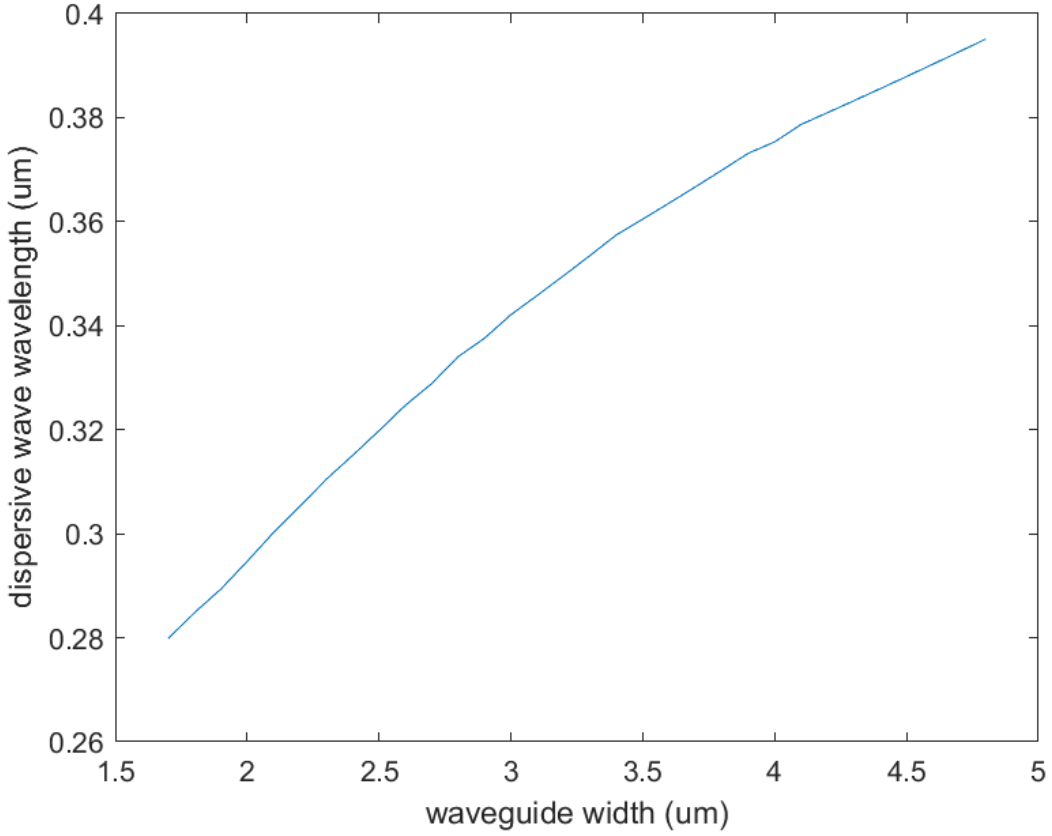
TE mode



Estimation of the fission length for SC generation (rectangular wg)

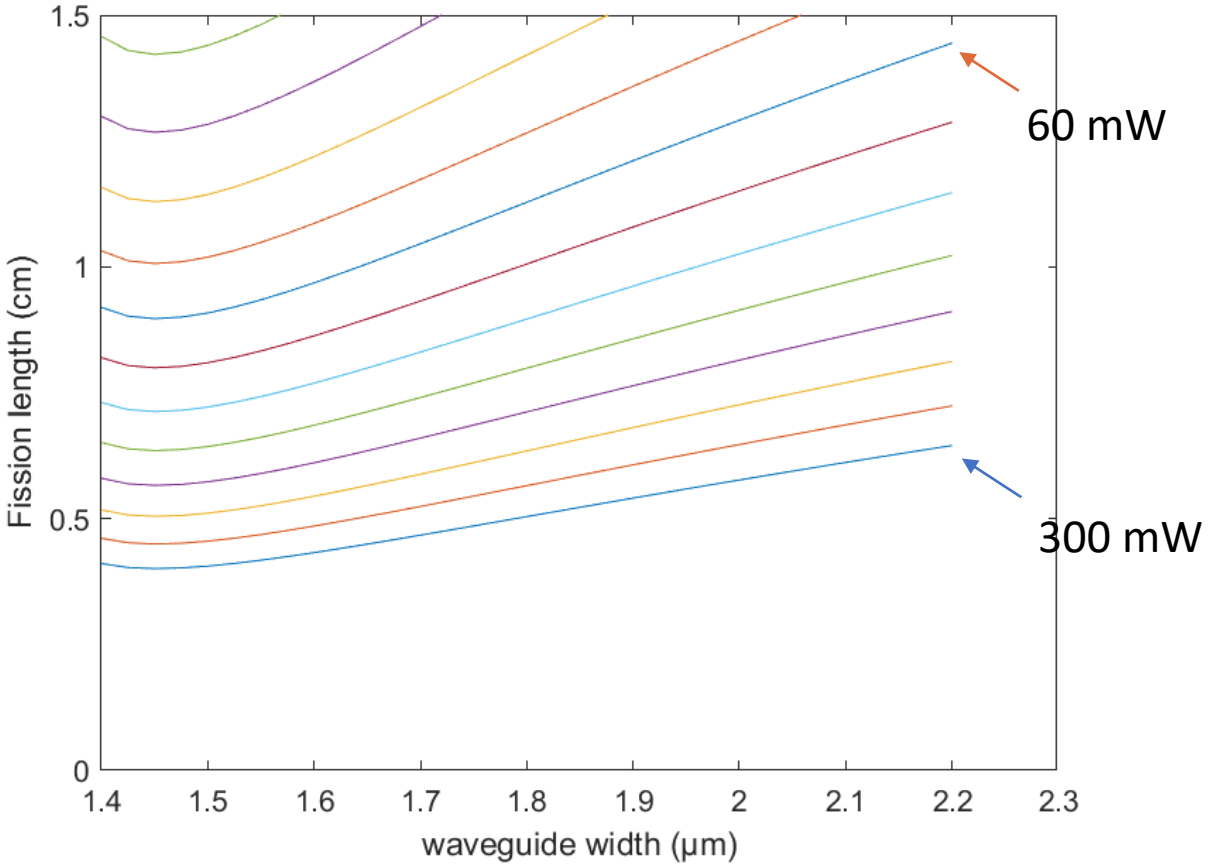
TE modes in 2 um thick rectangular waveguides, using our 1.55 um, 70 fs pump, for different average pump power:

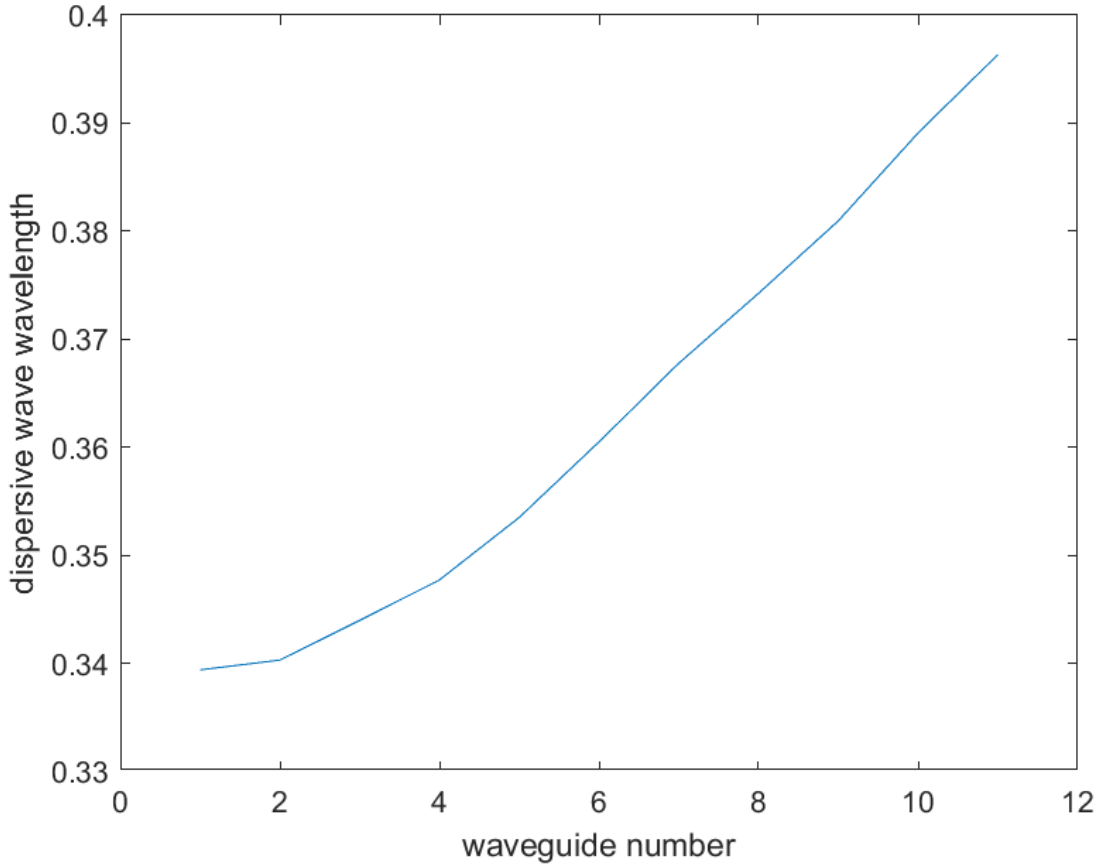




Estimation of the fission length for SC generation (triangular wg)

TM modes in triangular waveguides, using a frequency doubled pump (@785 nm, 100 fs), for different average pump power:





Conclusion

In conclusion, the interesting waveguides have the following dimensions:

Rectangular waveguides:
Under-layer: 450 nm
Height: 2000 nm (under layer not included)
Widths: from 1500 to 5000 nm
Length: 1.5 cm

Triangular waveguides:
Under-layer: 450 nm
Widths: from 1200 to 2500 nm
Length: 1.5 cm

Open question : how many waveguides / what width step ?