Erbium-doped Tellurite Glasses for Optical Applications

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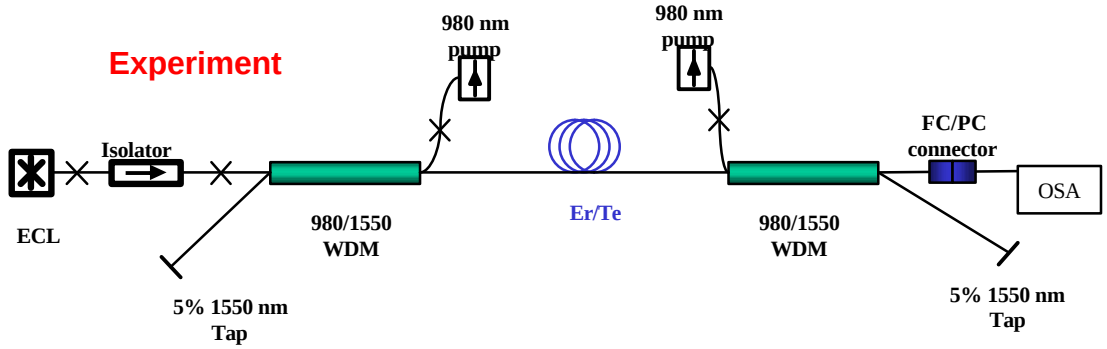
Objective

• Understand the microscopic origin and mechanism of broad emission spectrum.

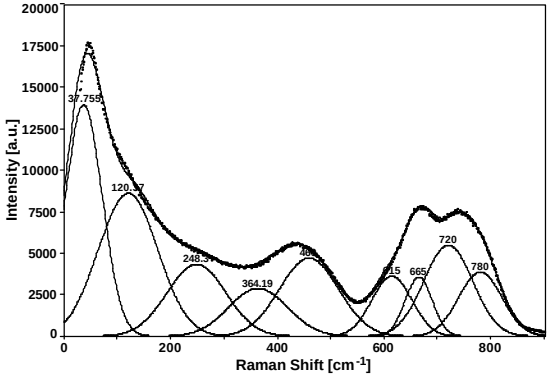
Introduction

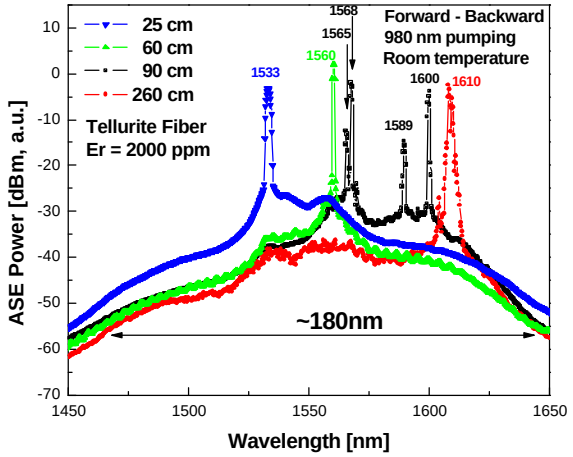
• Tellurite glasses are potential candidates for fiber laser and amplifier applications.
• We have fabricated double-clad Er^{3+}-doped tellurite single-mode fibers, and have studied their optical prope
• We observe a spectrally very broad emission (ASE) around 1.5 micron using a 980nm pump.

Experiment

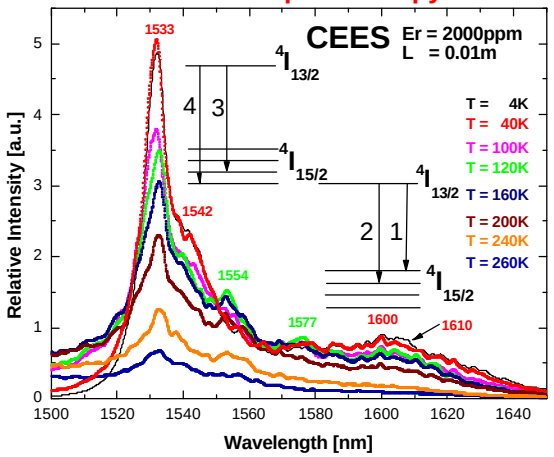


Raman Spectroscopy





CEE Spectroscopy



Conclusion

• Raman measurements gave info for improving the glass network. CEES gave info on emission at low T.
• Inhomogeneous broadening from erbium sites in tellurite leads to broader ASE spectra than in silica.