Stimulated Raman Scattering as a source of

Tunable Coherent IR Light

Reference: D. Cotter and D. Hanna, IEEE Journal of Quantum Electronics, QE-14(3), 184 (1978)

- Cs vapor in a heat-pipe cell, P ~ 10 Torr
- Nitrogen laser pumped dye laser:
  ~ 150 μJ/pulse; 6-7 ns pulses; 0.1 cm^{-1} bandwidth; λ = 448 – 467 nm
- Resulting SRS tuning range: **2.7 – 3.5 μ**

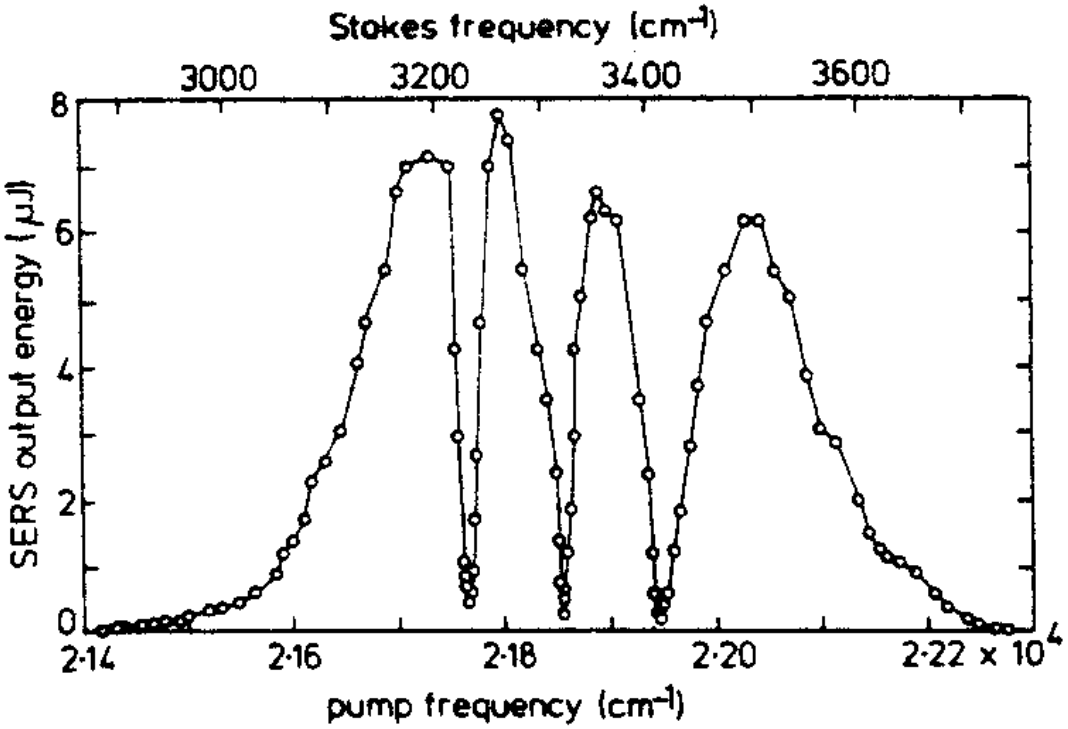

Fig. 4. SERS output tuning profile.

- Sharp dips in IR output are due to competing resonance multiphoton processes (e.g. photoionization)

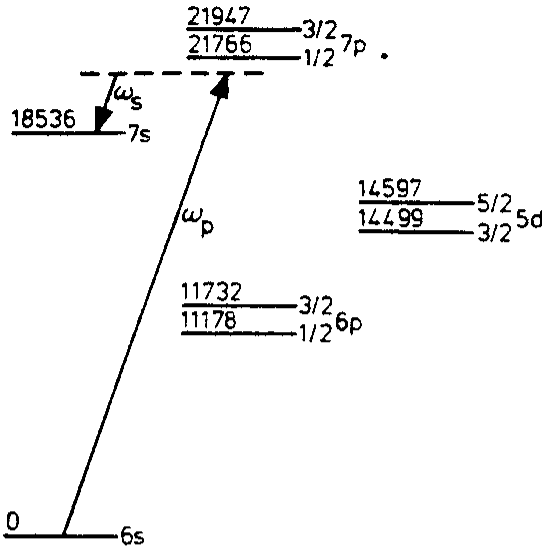

Fig. 1. Caesium energy-level diagram showing the 6*s*–7*s* SERS transition (energies in cm^{-1}).

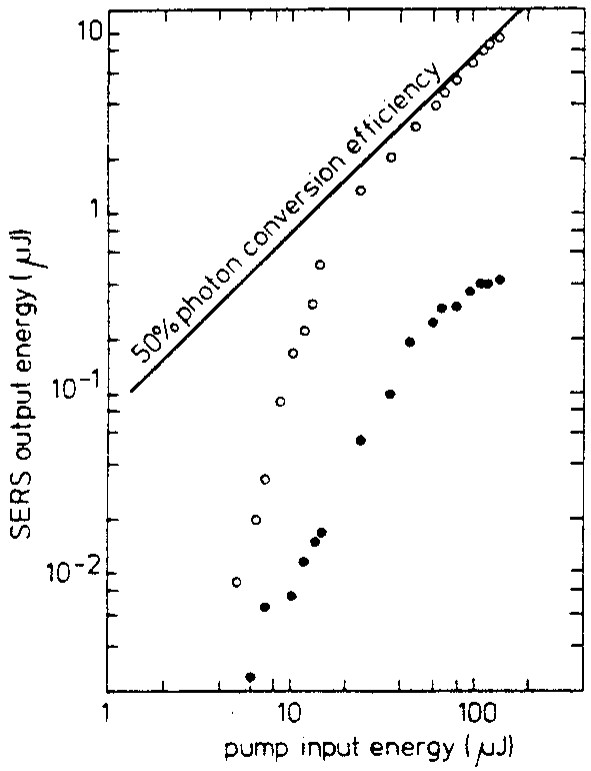

Fig. 2. SERS input-output characteristics at Cs vapor pressures of 10 (o) and 0.015 torr (•). The dye laser frequency was not the same for the two pressures (see text).