

MITOCW | Laser fundamentals III: Dye laser excitation of sodium

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PROFESSOR: In this experiment, we're going to illustrate how sodium atoms exhibit very strong absorption when excited by light at the resonance frequency of sodium. We're going to use a dye laser over here and a vapor cell of atomic sodium. We're going to tune the laser to 5890 angstroms or so, which is the resonance frequency for four sodium. And we're going to observe the sodium resonance fluorescence.

So when we come back, we'll have it set up for you so that you can observe for yourself this tremendous absorption exhibited by sodium when excited by dye laser radiation at the sodium resonance. The sodium is in a cell-- in a heated cell-- on the right. And what you can see right now, inside, you see the resonance scattering by sodium at 5890 angstrom.

Now, all I have to do is I tune the dye laser waveform resonance, and there's fluorescence. [? Onto ?] the resonance, here we are, plenty of scattered light. And I go the other side of resonance, and there's no absorption. So here we are again, on resonance and off resonance. On resonance and off resonance.

CREW: How was that?

PROFESSOR: Great.