

Methane to Music

Lesson 1: Exploring a Ruben's Tube Through Sensemaking



Lesson Logistics

[Watch Teacher-Author Walkthrough Video of this Lesson](#)

Handouts & Reference Links

- [Science Vs. Music Video](#)
- [Ruben's Tube Demonstration Video](#)
- [Physics @ Berkeley Lecture Demo](#)
- [Visualizing Sound Through a Ruben's Tube](#)
- [Seeing Sound Through Fire](#)
- [Fire Trumpet](#)

Required Materials, Equipment, & Supplies for 45 Students

- Post-It Notes, Rubens Tube, Filled Propane Canister, Bluetooth Speaker
- Rubens Tube [Instructions](#) & Materials: Drilling Machine, Long Metal Tube, Gas Pipe, Gas Cylinder, Speaker Wire, Guitar Amplifier, Crocodile Clips, Stands for the Ruben's Tube, Wire Strippers, Screw Drivers, Scissors, Amplifier Wire (PC to Amplifier), Lighter
- Alternate: [Sonic Flame Tube Demonstration Kit](#)

Detailed Description

Lesson 1: Exploring a Ruben's Tube Through Sensemaking

This lesson will use natural gas, like what is produced in a classroom biodigester, to power a phenomena to either make a Ruben's Tube where flames dance to the pulse of music

Lesson Preparation

- At some point before the lesson set up the [Rubens Tube](#) (or purchase a premade [Sonic Flame Tube](#) kit) and experiment with different types of music that produce the most visible flame response to sound. Make sure that the tube will not set off any automatic sprinklers.

Lesson Sequence

- (10 min) Warm-up: Show Cymatics Video "[Science vs Music](#)". After the video, students share the different ways that scientists fused science and music.
- (10 min) Show the students the class Rubens Tube. Explain the different parts of it: gas, speaker, the structure of rubens tube, etc. Tell them that it is being powered by renewable natural gas created by microorganisms in compost.
- (10 min) In partners, students will need to create a visual model of how they think microorganisms in compost can generate gas that can be compressed and used as fuel for a ruben's tube.
- (10 min) Each group has 30 seconds to share their visual model with the class.
- (10 min) On the Post-it Notes, students will start to write questions that they will need answers to in order to see if their model is correct. These are placed on the question board or collected by the teacher to be placed on the question board as an exit ticket.

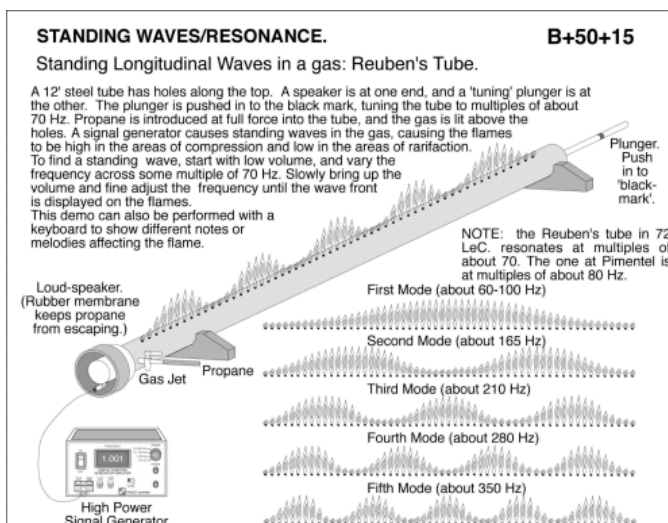
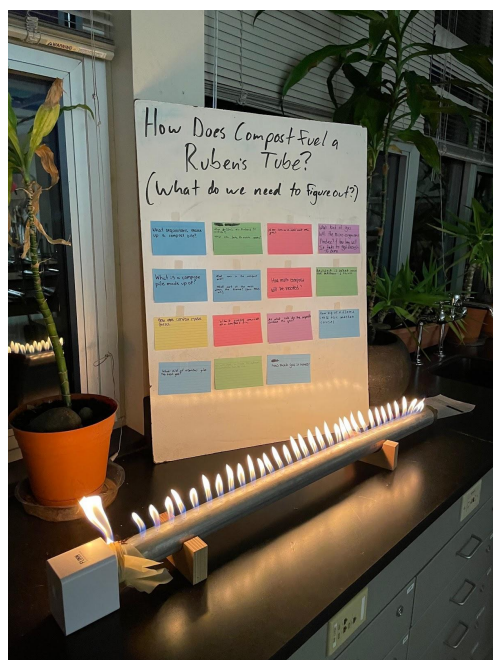


Image Source: <http://berkeleyphysicsdemos.net/node/208>