

Designing Future Sound



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MC Shiomi – acoustic engineer,
headphone designer.

- MC (who is also an amateur DJ) designs next generation headphones.
- “When I go to a club or a live concert, not only do I enjoy the music, but I also think about how all the different sounds balance each other out and how that music would sound through a pair of headphones”

Path to acoustic engineering

- At school she studied Geography, Maths and Physics at A-Level.
- She went to university to study Electronic engineering and computer systems.
- “Maths and physics really are key with engineering. I think that’s probably something that scares a lot of people away. They don’t like it because at school it never really translates into the real world for them. But with engineering, you get to see how these numbers turn out and what it produces”.

Designing Headphones

- There's a lot of work that goes into making headphones, from the design on paper to the final product. Shiori and her team build many prototypes and go through hundreds of tests to ensure the best sound quality.
- "It's very important to recreate the same atmosphere you experience at a club or live performance."
- "Part of recreating that atmosphere is making sure your headphones have high frequency capabilities and are compatible with High-Resolution Audio".

Testing your own headphones

- Test your headphones using the following website;
- http://www.audiocheck.net/soundtests_headphones.php
- In your group rank the headphones in order from best to worst. You must use valid evidence for this from the tests you perform.
- Take care when testing, make sure the volume is at a suitable level.

Making a model headphone

- Shiomi talks to sound engineers and musicians in music studios to gather feedback on the audio equipment used to create their music. These conversations set the quality sound standards that you can hear while listening with the headphones she designs.
- Shiomi also researches in live performances to experience how the sound moves there. Her goal is to create headphones that reproduce the sounds you would hear in the front row of a concert.
- <http://practicalphysics.org/model-loudspeaker.html>
- You are going to make a model headphone.
- You will investigate how the cone affects the frequency of sound for your model headphone.

The motor effect

- All electrical appliances contain an electric motor. This works because there is a force that acts on the wire in a magnetic field, when a current is passed through the wire. This is the **motor effect**
- [Simple motor effect](#)
- How would this work in a loudspeaker or headphones?