

## **What is the physics behind the noise created by the didgeridoo?**

### **Christopher Courrejou**

The didgeridoo is a wind instrument most commonly known as the main instrument used by the aboriginal tribes of Australia. It's simply just a branch that has been hollowed out from termites, and then is hand carved and painted to complete the didgeridoo. The didgeridoo is known as a natural trumpet in the music world, because the majority of the instruments playing abilities come from the natural process it goes through. All aspects of the didgeridoo, length, weight, shape, etc, affect the sound the didgeridoo makes. The harmonics created by the didgeridoo are what makes the didgeridoo so mysterious. It has the ability to make sounds that all other man made instruments fail to perform. The secret to its incomparable abilities lies within all the physical properties that separate the didgeridoo from all other wind instruments. These physical properties lead to the abnormal harmonics projected by the didgeridoo, which will be discussed in full throughout the talk.

## **The Message from Water**

### **Lausatianragit Thanabordin**

The purpose of this study was to investigate the effects of sound in water. Sounds have different structures and can be good sounds or noise. Music is one kind of sound and music is one way for people to relax. This seminar shows the structure of water when exposed to music of different types. It helps to know the differences of sound in music and in words.

## **Various Applications of an Optical Trap**

### **Brad Holmes**

An optical trap system uses an infrared laser to manipulate a microscopic particle in a solution. The particle experiences a force linearly proportional to the distance it travels away from the laser. This relationship is approximated with Hooke's law. Using the optical trap, the Brownian motion of a particle in a solution will be represented by studying the position and force over time. The system will also be used to trap E.coli bacterium and to study how it moves through its environment. Finally, an attempt will be made to determine the molecular orientation of a liquid crystal sample.