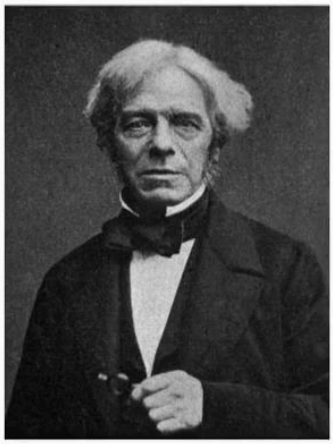
ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE

RESCIF
Réseau d'excellence des sciences de l'ingénieur de la Francophonie

Thermodynamique

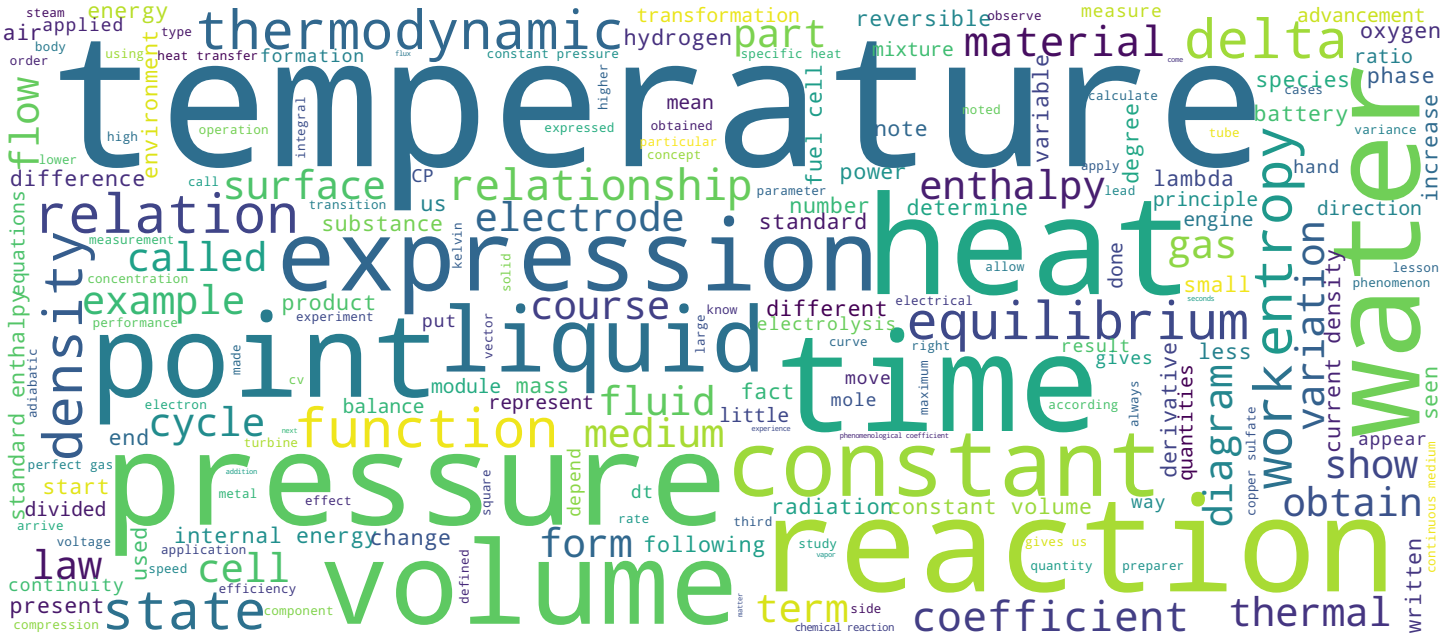
Expériences : Electrochimie



Michael Faraday, 1791-1867

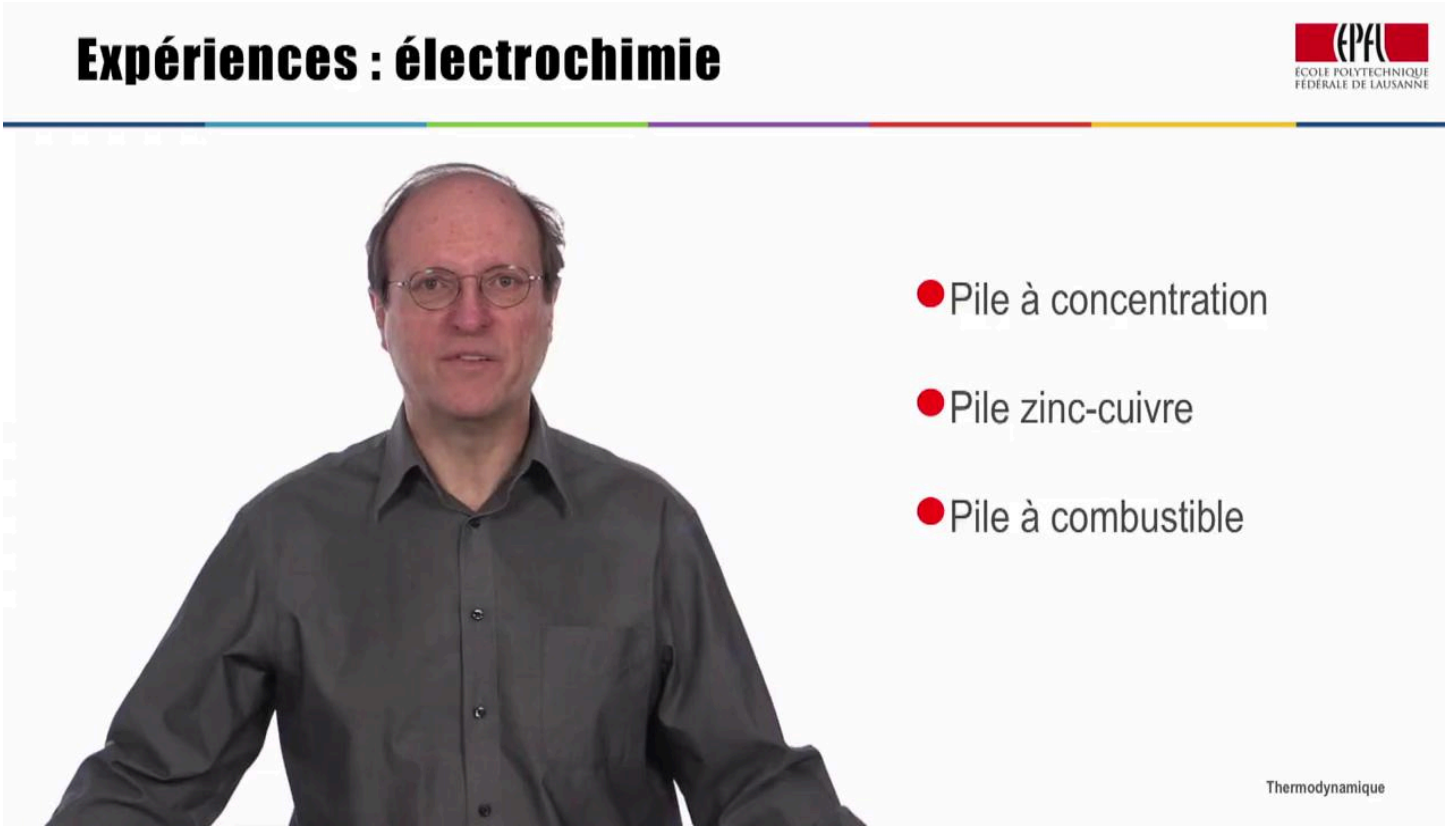
ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE

Prof. Jean-Philippe Ansermet



Video

EPFL

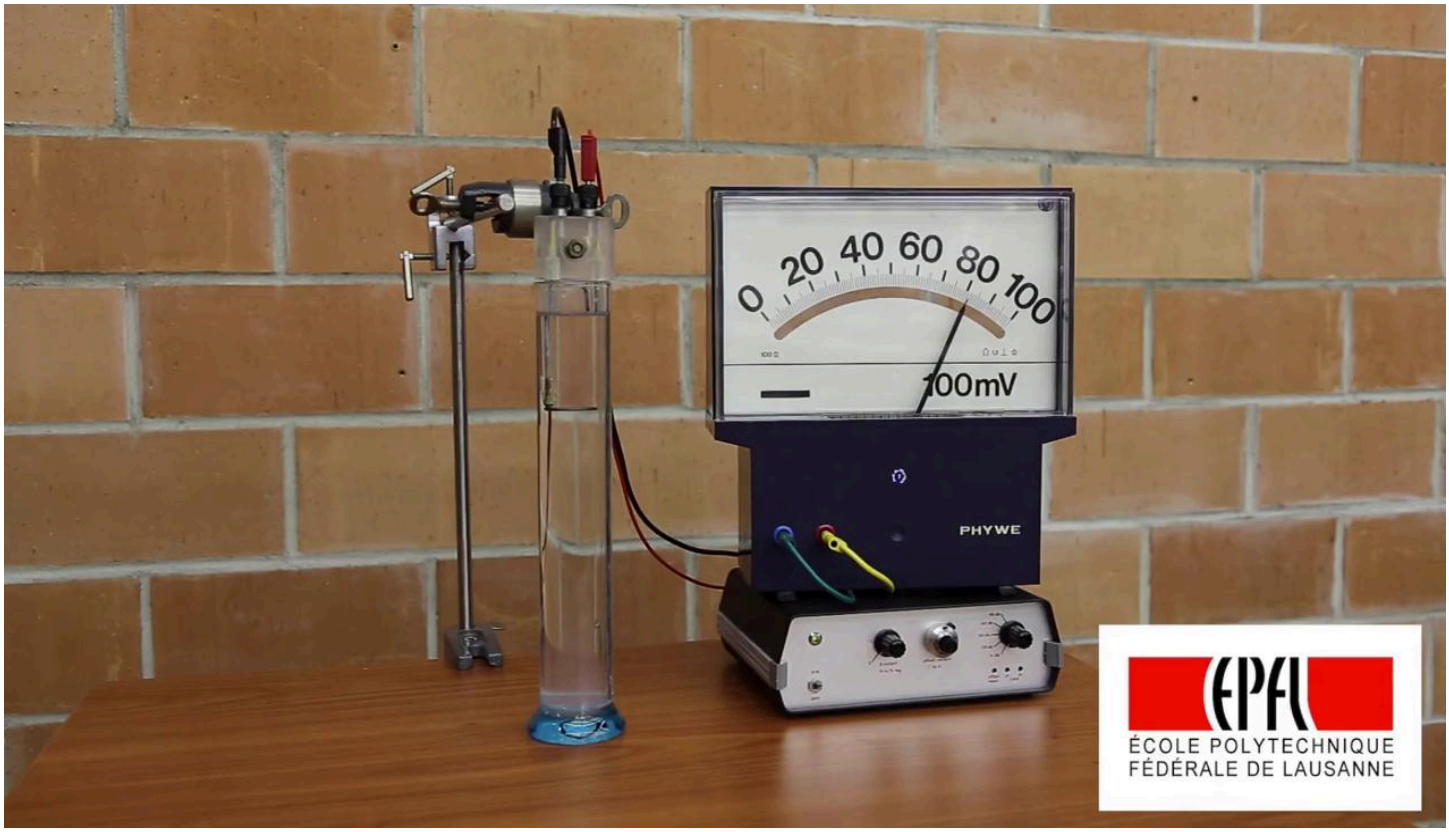


Here I am again to present you some experiences. In this module, I would like to make you aware of some aspects of electrochemistry. First, I would like to show you. A battery. Which depends on the concentration of the electrolyte solution in the vicinity of the electrodes. We will then look at a more conventional or the concentration has the same everywhere. But the electrodes are different. And finally we will see a fuel cell in operation. To be powered by hydrogen and oxygen produced by electrolysis.

Notes

Summary

0m 04s

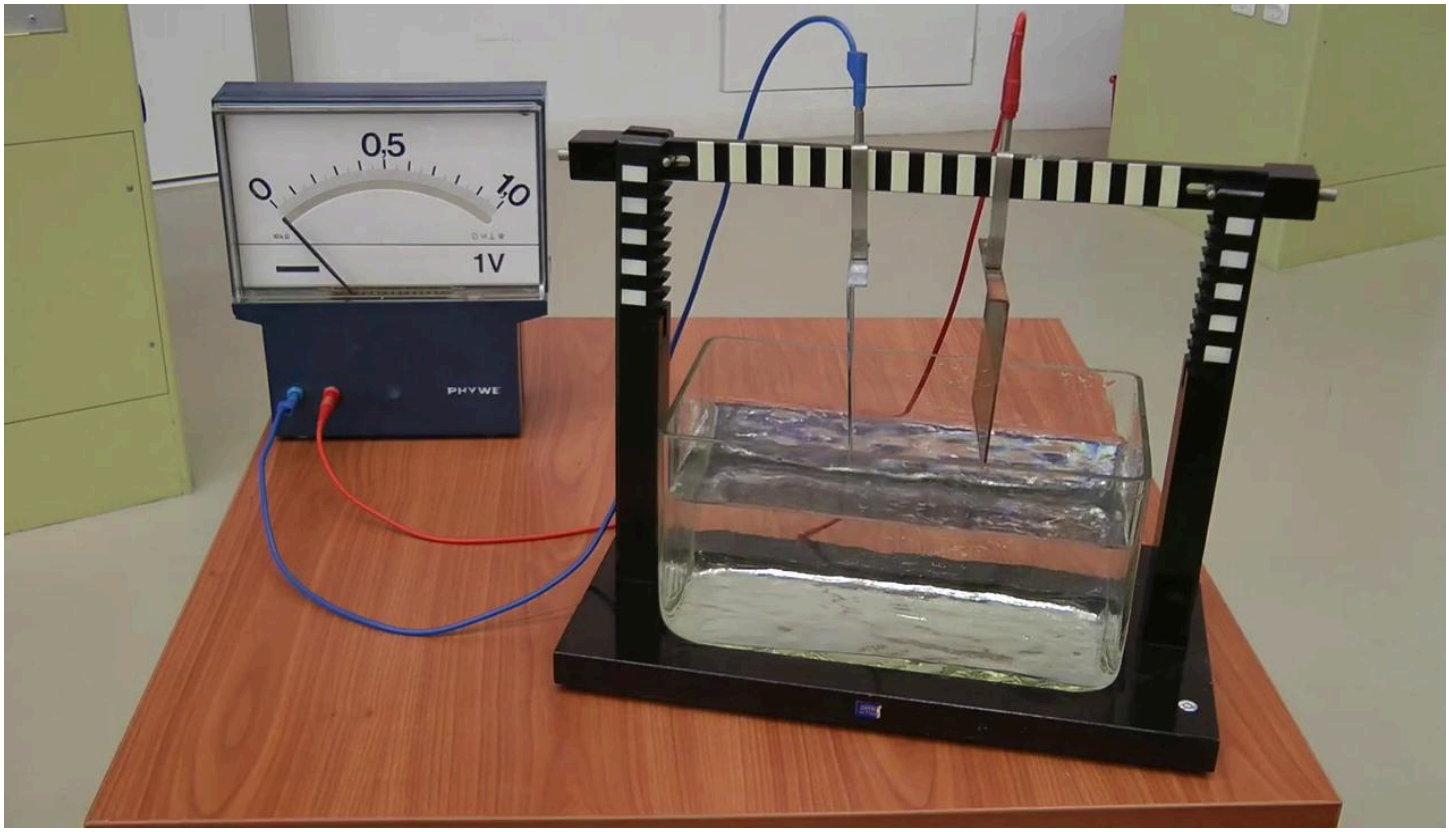


Here is an electrochemical cell. Which has two electrodes. These are two rings which can be distinguished in one third of the height in the tube and at the bottom of the tube. There is a solution of copper sulfate. We observe that, in the presence of practically pure water, we have a voltage at the terminals of this electrochemical cell which is close to zero. I remind you that the two electrodes here are made of the same material. Now you will see what happens when you dive? The lower electrode in the copper sulfate zone. Here is our cell and the preparer will lower the device until the lower electrode is in the copper sulfate solution. And we immediately observe that a voltage develops at the terminals of the cell.

Notes

Summary

0m 50s

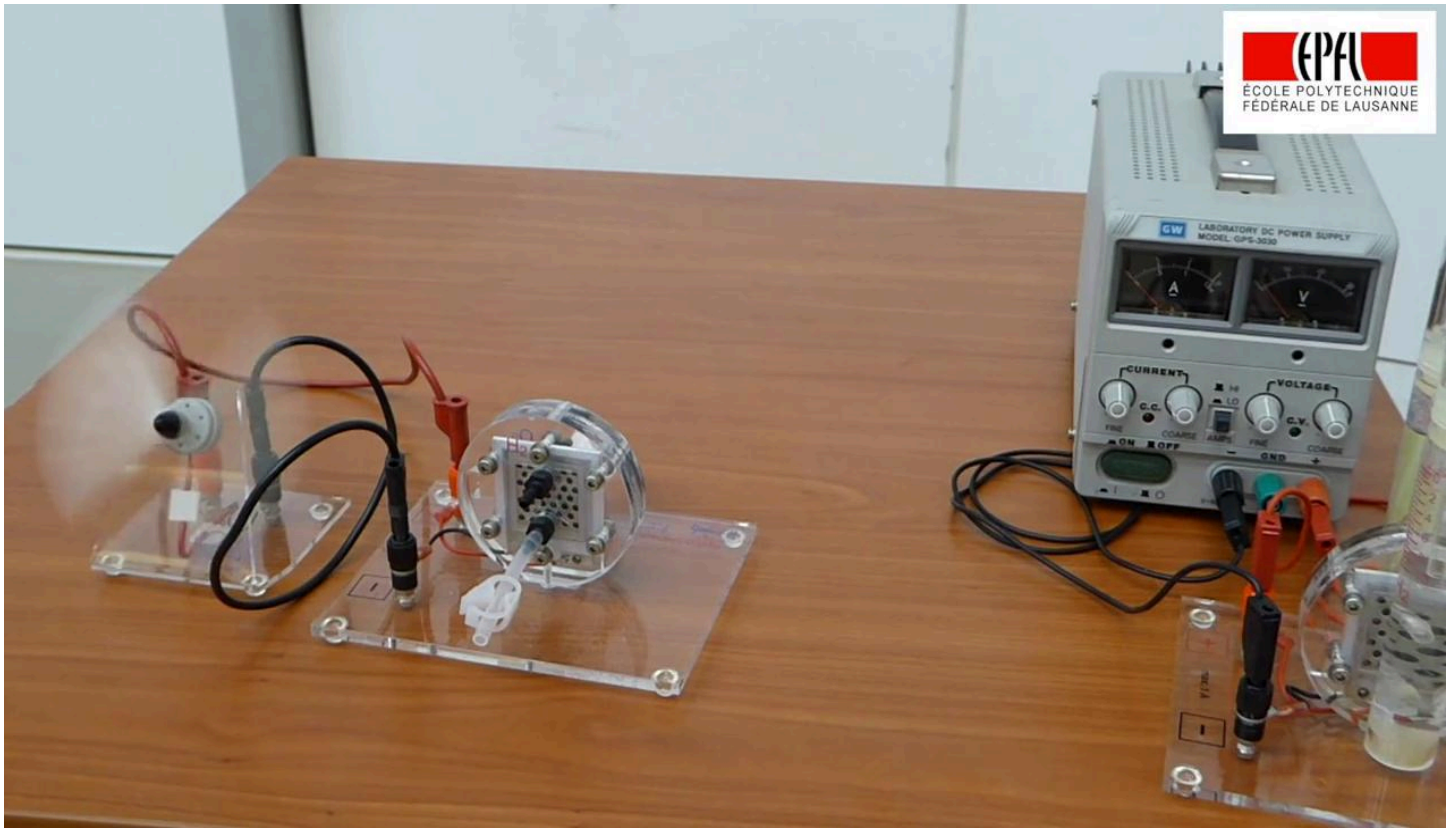


I now move on to a more conventional cell. Here you have a salt water bath and two electrodes, one in copper on the right and the other in. As soon as the preparer. Immerse the electrodes in salt water. A voltage of about 0.8 volts appears. On the voltmeter. And of course, if you remove the two plates, the voltage drops to zero.

Notes

Summary

2m 04s

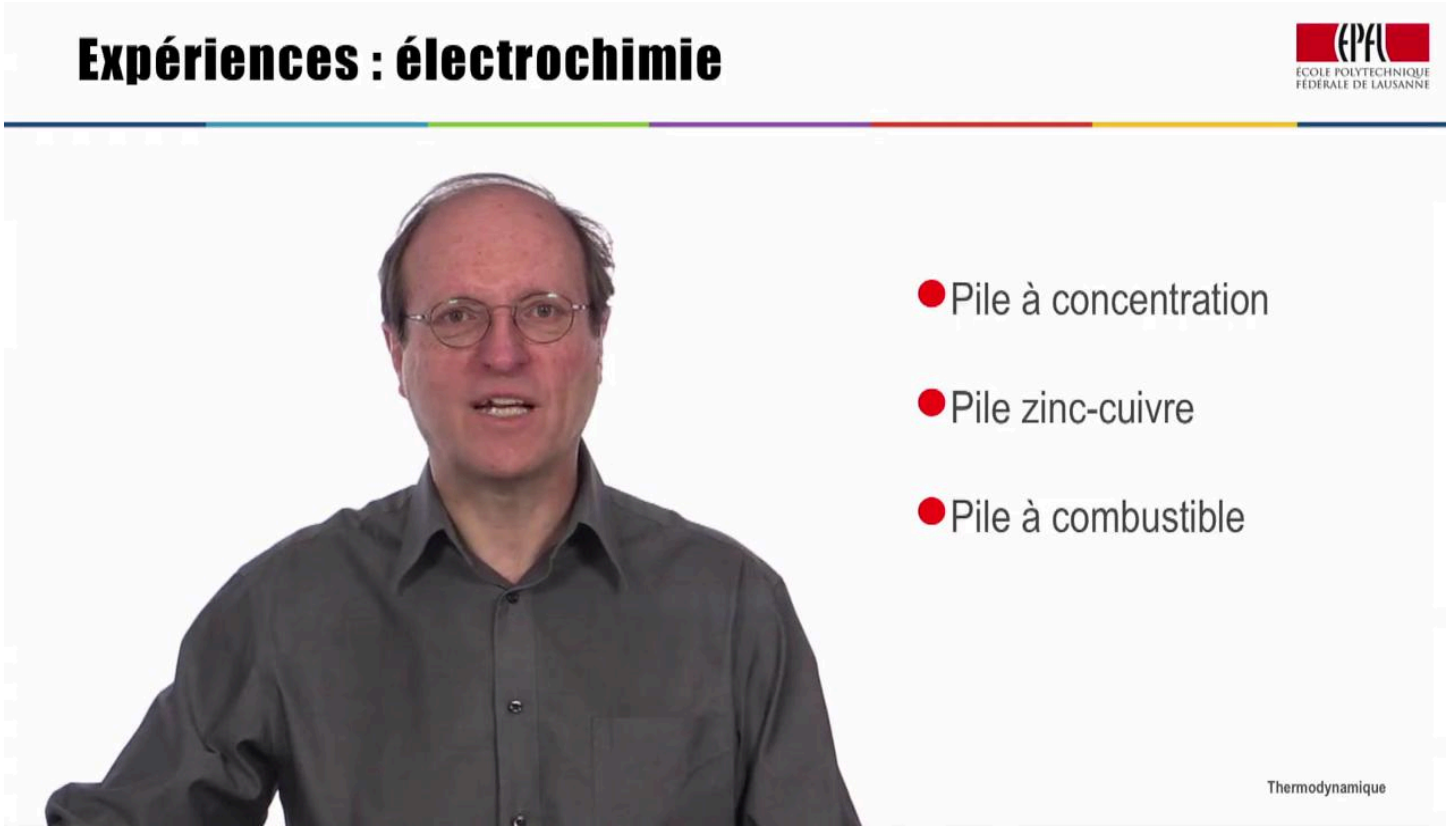


Finally, I present you the following system. We have. A cell in which the electrolysis of water will be conducted. The two white plastic pipes will bring the hydrogen and oxygen on a fuel cell that will produce enough electricity to make this little fan run. Here is the cell in which the electrolysis of water is done. You have to wait a few seconds. These are the bubbles that signal the formation of hydrogen and oxygen. And. The cell in the middle is a fuel cell that produces electricity, as seen with the fan. There is enough gas right now in the cell to make it possible to turn the fan for a few seconds.

Notes

Summary

2m 40s



In summary, to show you some aspects of electrochemistry, I first introduced you to a concentration cell. Then we looked at a pile which contains a wine electrode and a copper electrode. And finally, we saw an electrochemical system where hydrogen and oxygen were produced by electrolysis that was then used to recombine in a fuel cell to produce electricity. Thank you for your attention.

Notes

Summary

3m 46s