

Student's Learning Activities (Joliot-Curie and artificial radioactivity)

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You will watch a video with narration or listen to a story from your teacher about Irene and Frederic Joliot Curie and their work on artificial radioactivity. Please write the most important points of the story according to your view and discuss them in your group. (Indicative important points of this story: description of Irene and Frederic's experiment, experimental findings of Anderson, experimental discovery of Chadwick, how these discoveries have affected their work, how science is developed,)
Activity 2 Based on the narration and the information about the events before the discovery of neutron which are described in the bellow link:
http://www.google.gr/imgres?imgurl=http://www.goalfinder.com/images/SPAPRO7/Curie-chadwick-discover-neu.jpg&imgrefurl=http://www.goalfinder.com/product.asp?productid%3D108&h=332&w=450
write a text in order to explain why the discoveries were not attributed to Irene and Frederic Joliot – Curie while they had successfully implemented the relevant experiments.



Activity 3
Please visit the website bellow and discuss how Chadwick explained the experimental data of his
experiment and discovered the neutron:
http://www-outreach.phy.cam.ac.uk/camphy/neutron/neutron4 1.htm
Please explain what Chadwick did more than the couple Joliot – Curie, so that the discovery of neutron was attributed to him.
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Activity 5

Please read the following text in order to understand what the couple Joliot-Curie had discovered and why won the 1935 Nobel Prize in Chemistry.

"..... Irene and Frederic could do was once again to confirm his experimental findings in which different materials were exposed to α -radiation.... ...When a proton is emitted from the Aluminum, it is obvious, we get a Silicon atom. But what kind of atom can be formed when a neutron is emitted?if we have a neutron and a positron, that would bring us back to silicon. However, it would be very unusual to have triggered emission of the two particles simultaneously. ..

Irene was still looking at the set-up and suddenly became excited: "Frederic look, there is still a trace of a positron."....

...

When we irradiate materials with α -particles, the result is a transmutation of a new element. But this is an instantaneous process.

...

They had converted aluminum into phosphorus with the emission of a neutron. The phosphorus then underwent positron decay.

 $27Al + 4He \rightarrow 30P + neutron$

 $30P \rightarrow 30Si + positron + (neutrino)$

After that please verify that in the above reaction the mass and the electric charge is the same in both sides of the reaction.

Activity 6



	e and write a paragraph about o/encyclopedia/P/positron.ht	the main properties of the posi	tron.
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your group and identify some		ects of NOS. Could you please ? How?	discuss in



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	Activity 9 Please write a text about the artificial radioactivity and its uses today for the benefit of man and the society as a whole, researching in the internet and exploiting the new knowledge we constructed from today's lesson.

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