Scientist Rachid El-Yazmi: Morocco has the qualifications to manufacture high-quality lithium batteries

Dr. Rashid Al-Yazami receives the Professor "Stanley Whittingham Award" at the Sustainability Forum in Energy and Environment in Thailand 2022 (Florian Congolese, Fusion Stars Outreach)

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The march of the Moroccan scientist, Rachid Al-Yazami, seems exceptional to a large extent, as he is called the “Father of Batteries” and he is credited with inventing the missing floor in batteries, which he called “Lanode Graphic” between 1979 and 1980 for the development of rechargeable lithium batteries, this chip that is now found among the components of phone batteries. mobile.

Dr. Al-Yazami is considered one of the prominent names in the field of developing rechargeable lithium batteries in the world, and he recently came up with a new invention that allows charging electric car batteries in record time.

He was one of the most prominent researchers at the French National Institute in Paris, before moving to America to work at Caltech for 10 years, cooperating with the US space agency "NASA" to employ rechargeable batteries in spacecraft. The first battery that went to Mars included the invention of this Moroccan scientist, "Lanod Graphic".

Despite his many commitments, Al-Yazami continues to devote his time to developing a group of inventions and research and industrial projects in the field of energy and their applications in both Singapore and Morocco, in addition to his strong presence in international conferences and forums, the most recent of which was the "Sustainability in the Energy and Environment" forum in Thailand on November 29. the past.

During this busy scientific career, Dr. Al-Yazami was honored with many prestigious international awards in the field of energy, the most recent of which was his award in the name of Professor Stanley Whittingham, winner of the Nobel Prize in Chemistry for the year 2019, due to his distinguished work in the field of batteries on the sidelines of the forum. Thailand.

About his scientific career, his inventions, and his upcoming projects in the field of developing lithium batteries, Al-Jazeera Net had this dialogue with the Moroccan scientist Al-Yazmi.

Dr. Al-Yazami has companies in Singapore that are interested in technological research on batteries (Al-Jazeera)

- **First of all, let us know about your current professional, scientific and academic concerns?**

I have companies in Singapore in which we are interested in technological research on batteries and their control, especially with regard to fast charging, and I also work with academic scientific research centers, including the California Institute of Technology (Caltech) and with a large laboratory affiliated with NASA, and we have scientific research projects in the field of modernizing new batteries It can be used in special climatic conditions.

In addition, I have work with a private university in the city of Fez, in the Kingdom, on the project of the Center of Excellence for Batteries, and I am a distinguished visiting professor at a university in Kazakhstan.

- **How were you selected to win the Professor Whittingham Energy Prize?**

The award came as a surprise to me, and I did not know that I would win it, and this is the best that anyone can know, which is that you will be nominated for the award and be chosen to win what I call it Professor Whittingham, whom I know for 40 years because he is one of the first to use fusion materials to develop a battery capable On charging in lithium.

- **We knew the nature of this award and the institution that grants it?**

This award is under the name of Professor Whittingham, and I am the first to win it. The organization that organized the forum in Thailand is called FLOGEN Stars Outreach, and every year it organizes the conference, but with the Corona pandemic, it stopped organizing it for two years.

The peculiarity of this global forum lies in the fact that Florian Kongol, the supervisor of the forum, was able to attract 9 scientists from the Nobel Prize winners to attend the forum, and the level of the forum is very high. It is Congolese, and we hope that this conference will be hosted in Morocco in the coming years, God willing.

- **Tell us about the most important awards you received in your career and the closest to you?**

The most important award I won is the "Driver Award" awarded by the National Academy of Engineers in the United States in Washington in 2014, and it is considered a Nobel Prize, and since its level is very high, people began to recognize me, especially in Morocco.

In the same year, I was awarded the Medal of Intellectual Competence by King Mohammed VI, and in 2016 I was awarded another by the French government, which is the highest award you can give to anyone.

There are other awards that I got in Paris, Kuwait and other countries, and it is difficult for me to present to you a list of all the awards, but thank God the energy specialists recognize the work that I do, especially the invention of the “Graphic” material that is used as a negative layer in rechargeable lithium batteries or what is called The anode that is found in every mobile phone that has a battery, which includes my invention, is why people know me all over the world.

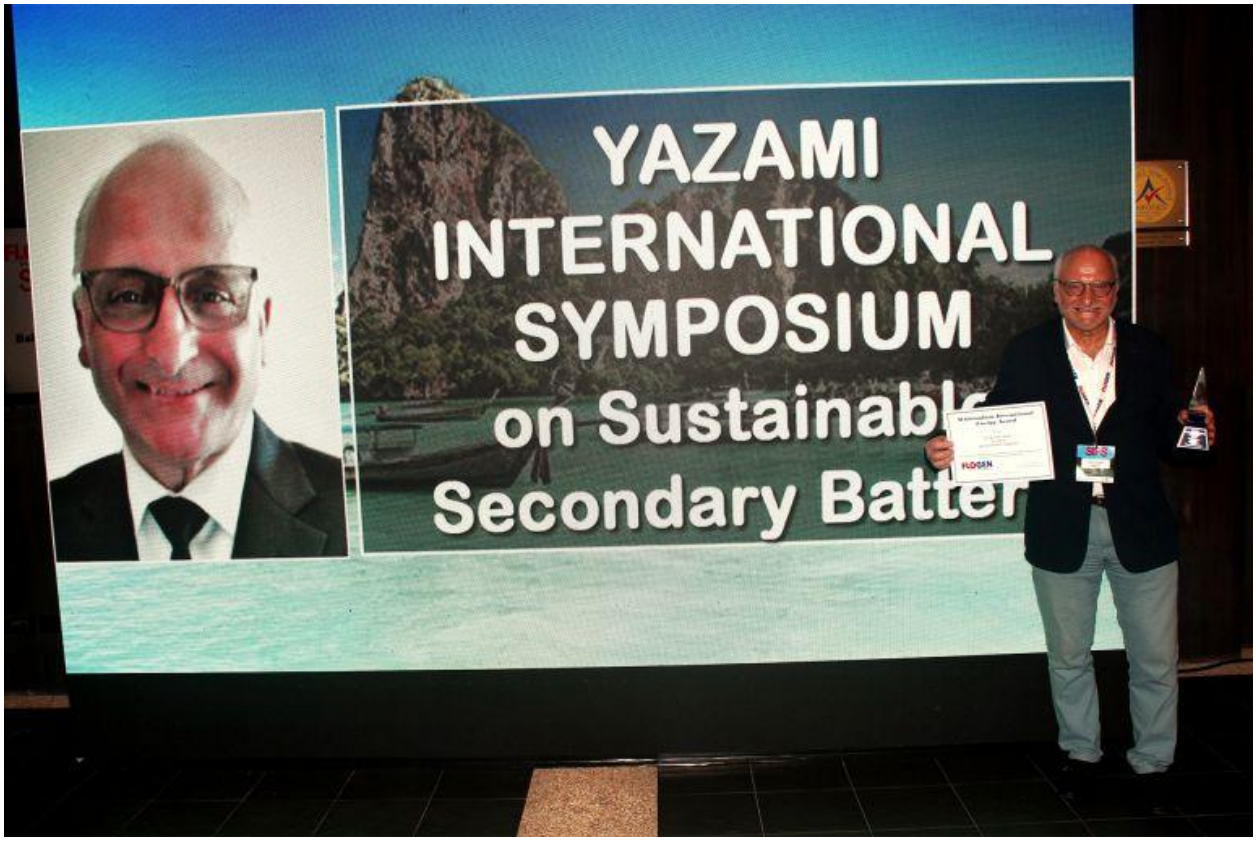
- **How many patents do you have so far?**

According to the website of the International Patent Office in Geneva, I have 180 patents, and the first one that conditions did not allow to be issued is the invention of the "graphic" material. So far - according to the lithium battery market - this invention has a value of at least 50 billion dollars, and I have new inventions, especially in developing Methods for charging batteries in a short time, and a method called "NLV" was invented to charge batteries in less than 10 minutes.

- **Where did you patent a device that takes 5 minutes to charge batteries?**

We are working on it, and I now have a new company that we will finance in Singapore, and its aim is to develop a fast charger for the lithium battery, especially in electric cars, and God willing, this year we will develop models of this charger in partnership with electric car makers in

Asia, because they are interested in this technology and we are working Together we will develop it over the next year or two.



Dr. Al-Yazami is one of the prominent names in the development of rechargeable lithium batteries (Florian Congolese, Fusion Stars Outreach)

- **Independent inventors face great challenges in Morocco, so what do you suggest to overcome them?**

This is normal because the invention is a stage in the development of an industrial product and it takes time. I give you an example of inventing materials that are used in lithium batteries and marketing lithium batteries. The time difference was 11 years.

And if it is natural that the invention needs time, then inventing does not mean that you will start marketing. The inventor must be a contractor or look for contractors with whom to develop his project, because what is important is financing, and financing is from investors and the government to develop this technology to reach the market.

- **What is the nature and quality of the research you are conducting now in your field of specialization?**

I have projects in the companies that I supervise, and in universities, America, the Emirates and Kazakhstan, and all of this requires me to work daily in order to keep my interest in theoretical and scientific research in the academic field, and to develop some technologies in companies here in Singapore, including the development of fast chargers for electric cars, as well as mobile electronics Such as mobile phones, account and power bank.

- **You established the Center of Excellence in Batteries at the private university in Fez, what are its roles and objectives?**

The project of the distinguished center for batteries at the private university in the city of Fez is very important, and I am in talks with investors around the world to establish a factory for the manufacture of batteries called “Gigafactory” in Morocco, and there is also another factory being established for the manufacture of fast chargers for electric cars in the Kingdom, and this All projects are being worked on by communicating and holding meetings with investors interested in this technology.

This project came within a university framework to prepare Moroccan technicians, engineers, researchers and others about batteries, given that there is no center in Morocco or Africa that has primary specialization in batteries, and therefore we want to train Moroccan engineers and researchers to know the problems of batteries and how to find solutions to the problems raised, and how they are used in a special framework for storage Energy, or in electric cars or mobile

electronics, in addition to preparing engineers and researchers to obtain a doctorate in partnership with the University of Sidi Mohamed Ben Abdellah in Fez and the University of Moulay Ismail in Meknes.

And those engineers and researchers who will be trained will have competence in managing batteries with a large number of uses, such as energy storage in electric cars, in addition to the applications of lithium batteries, especially if we have “Gigafactory” batteries in Morocco, which will have priority from a technological point of view.

According to the website of the International Patent Office in Geneva, Dr. Al-Yazami has 180 patents (Al-Jazeera)

- **Where did the Moroccan electric charger project for batteries, which you are supervising, reach?**

So far, we have not started any funded project within the framework of developing a fast charger for lithium batteries in Morocco. Now we are in the stage of searching for Moroccan and foreign investors to start the industrial development of the fast charger, and we hope that it will be in Morocco. I have a company in Singapore that will develop the fast charger for electric cars in Asia.

- **What are the available opportunities for the battery industry in Morocco in light of the competition between industrialized countries?**

Morocco has very important qualifications to be able to manufacture lithium batteries of high quality at a competitive price compared to batteries made in China, and the Kingdom has the largest stock of phosphate in the world, and it is used in lithium batteries, especially in the extra floor and electronic ones, and now batteries in which phosphate is used are manufactured In China, and I believe that 80% of the phosphates used in it come from Morocco.

So, instead of exporting phosphate abroad, it can be used in Morocco to manufacture 100 percent Moroccan batteries, and the Kingdom also possesses cobalt, and this material is very important in the plus pole of batteries, and all these qualifications that Morocco possesses are very important. We only lack lithium, and it can be obtained from Chile or Australia. Graphtik can be obtained by the major companies that have their own mines.

In addition to what I said regarding qualifications, there is a market for companies that link Morocco, Europe, America, Turkey, and Northwest African countries, and these are large markets to which the Kingdom can export Moroccan batteries without customs duties, and they will be 20% cheaper than batteries made in China, in addition to proximity. geographical. For example, Morocco is about 14 kilometers away from Spain, with communication with West

African countries through roads and ships, and therefore the size of this market is very huge, and it means a billion people.

- **How can the challenges facing the battery industry in Morocco be overcome?**

I think it is psychological, because the financial support is there, the technology is there, and the qualifications are available, and what we need is for investors from abroad to take the initiative, so I am now in the framework of talking with them, and an investor from abroad will come and contribute a very huge amount of financing for the “Gigafactory” project in Morocco, Its cost is at least one billion dollars, and it is better that the amount be 4 or 5 billion dollars in order to have a large production according to the size of the market.

Source : Al Jazeera