Scholar 491

Chapter 492: Visiting Yuhua University

Yuhua University used to be the Hunan Institute of Technology, which could be traced back to Central South University.

In 1959, due to China's development of nuclear weapons and the nuclear industry in general, the state moved the Central South University mining and metallurgy engineering departments to Hengyang.

In the late 1960s, it was closed due to special reasons. Later in the 1980s, under the leadership of the Ministry of Nuclear Industry and the Hunan Provincial Government, it was revived in the form of the Hunan Institute of Technology. Finally, it was renamed Yuhua University in the 1990s, which had stayed that way ever since.

In some sense, the fate of this school was deeply tied to the republic.

Even though it wasn't a particularly good school, its engineering department was still at the forefront of the country. It also produced a large number of nuclear industry experts back in the day.

And now, it was still shining in its own light.

Box..

The stellarator research wasn't a project that received heavy support; it was the most unpopular controllable nuclear fusion device. However, there was still a 30-people research team that was engaged in this research field.

The purpose of Lu Zhou's trip was very clear; he was here to poach talents.

Of course, this wasn't particularly good for Yuhua University.

In some sense, he was here to do an academic exchange.

But honestly, if this thing went through, it would bring benefits to Yuhua University.

The small Yuhua University was suddenly visited by a big name like Lu Zhou. Their leadership team might know that this visit would bring benefits to them, or they might not know that.

Regardless of the fact that he was a Nobel Prize scholar who came to the school to do a seminar, even if it was someone from Shuimu or Yan University, they would still welcome them with banners…

[Welcome, Professor Lu Zhou!]

A college student was holding a textbook. When he looked at the banner, he asked his roommate.

“Why do you think God Lu is coming to a place like this?”

The slightly bigger guy shook his head and said, “God knows.”

A tall skinny student walked over. He pushed his glasses up his nose bridge and said, “Jinling is building some controllable nuclear fusion research center, right? I think Professor Lu is in charge. They’re probably coming here for our H1 Stellarator.”

The guy holding the textbook asked, “How come I didn’t hear about this?”

The tall student adjusted his glasses again and said, “It’s normal. The news didn’t really report on it, but it doesn’t seem to be a secret either. I heard it from the student in the nuclear engineering department.”

The guy who hadn’t spoken yet said, “It doesn’t have anything to do with us; let’s go to class.”

“You’re right,” the students said as they nodded their heads. They then walked toward their classroom.

In fact, even if they wanted to go, there would be no place for them.

Because the lecture hall in Yuhua University was already completely packed with people.

It wasn’t just Yuhua University students in the crowd; there were many Yuhua University professors and lecturers and even people from other universities.

Other than the students and professors, there were also reporters from the Hunan TV station.

The lenses were all pointed toward the stage; everyone was waiting for the person to start speaking.

Lu Zhou looked at the crowd and couldn’t help but think.

I think my last lecture was in Stockholm.

It’s been three months since then.

Lu Zhou looked at the clock on the wall; it was about time. The staff next to him nodded, telling him he could begin.

Lu Zhou stood in front of the microphone and cleared his throat. He waited until the classroom quieted down before he started to speak.

“A lot of people have asked me. China doesn’t lack electricity, and we have the Three Gorges Dam, coal mines, and our power generation ranks first in the world. We also have thermal and hydropower. Our power grid technology is also leading the world right now… So, why is it that we have to research the cumbersome nuclear power?

“My answer to this question is that scientific research cannot only be focused on the current investment or short-term benefits. Researchers also have to have a long-term vision and courage to face difficulties.

“Looking at it from a large enough time-scale, nuclear energy is the ultimate energy source for humans. Because we have the largest population in the world that consumes a quarter of the world’s energy output, we should optimize our energy structure. We should make it cleaner, more efficient, and cheaper.

“Besides, this doesn’t apply to just controllable nuclear fusion technology. Every major scientific research project brings us more value than just the project itself. This is just like how when I was studying the Navier–Stokes equation, I discovered the L Manifold and differential geometry solution to the partial differential equation. The treasures we find at the end of the maze isn’t inferior to the achievements we make along the journey.

“Take controllable nuclear fusion as an example. Controllable nuclear fusion research has pushed the superconducting materials field, allowing us to dive deep into plasma research and helping us in creating stronger superconducting magnets. There are tons of beneficial by-products.”

Lu Zhou introduced the theme of the seminar in a few short sentences. He picked up the marker from the desk and turned around, facing the whiteboard. As he explained using simple language, he began to write on the whiteboard.

Wang Xuehai was sitting in the crowd writing notes when he accidentally dropped his pen cover. He bent over and picked it up. When he looked up at the whiteboard again, he was muddled. He had no idea what was on the whiteboard.

Wang Xuehai looked at the podium and couldn’t help but mutter, “What is he writing about?”

Fang Jie was sitting next to him; he also studied nuclear physics. He adjusted his glasses. Even though he didn’t understand either, he wasn’t as muddled as Wang Xuehai. “It looks like a mathematical model for plasma turbulence? I think I’ve read it in a thesis before.’

Wang Xuehai: “F*ck me! Isn’t this supposed to be a simple science lecture? Does he have to be so hardcore?”

Fang Jie looked at him and said, “Of course! He’s a Nobel Prize scholar; you’re obviously not going to be on the same page as him.”

Wang Xuehai couldn’t help but ask, “Is there anyone that can understand him?”

Honestly, he was pretty confident at his physics knowledge.

However, plasma turbulence was the frontier of international physics research.

His major was in nuclear physics, which meant his research direction was more applied rather than theoretical. Without two weeks of preparation, there was no way he could understand these esoteric things.

Fang Jie closed his laptop and shook his head. He then used his chin to point at the seats in the front row.

“It doesn’t matter if we understand or not. Just look at the professors from the Institute of Nuclear Physics, and you can tell how much they understand just from their facial expressions.”

Just like what this PhD student said, for the second half of the lecture, Lu Zhou went from simple science to the esoteric areas of controllable nuclear fusion, or specifically, the high-temperature plasma research.

Actually, he had already written a few theses that outlined his research results. His most important thesis was published at the Max Planck Institute. Last year, he did a report on that thesis at the European Nuclear Summit.

However, Lu Zhou’s in-person explanation of his theses was more in-depth than reading his theses directly or reading someone’s summary of his theses. Listening to him in person was greatly beneficial for the people in the field of controllable nuclear fusion or plasma physics.

Actually, this was why many professors came all the way from the provincial capital.

If it wasn't because of time constraints, some international people might even take a flight to come and listen to this lecture.

As Lu Zhou wrote down the last line of equations on the whiteboard, his explanation also came to an end.

He put the marker on the desk and paused for a second. He then looked at the audience and spoke.

"This school is strong in nuclear engineering, and everyone sitting here is the pillars of the future nuclear engineering field. The future of nuclear engineering depends on you guys!"

Chapter 493: Interested In Joining?

There was a round of applause in the lecture hall.

Lu Zhou walked down the lecture hall platform in the midst of the applause.

Principal Wu Zhuohua, the school leadership team, and some of the professors were waiting at the lecture hall entrance. Once Lu Zhou was done with the media interviews, they walked over to him.

Principal Wu had a warm smile on his face as he greeted him. "Thank you, Professor Lu, for bringing such a vivid presentation to our Yuhua University students!"

The few students that were standing near them cringed.

Other than the beginning and the end, they didn't think it was vivid at all.

Box..

Lu Zhou smiled and humbly said, “This doesn’t count as vivid. It’s just my personal explanation on some of my controllable nuclear fusion research and some high-density plasma research. It might be a bit boring.”

A professor was standing next to them, and he didn’t look too old. He smiled and said, “How is it boring? I benefited a lot from your lecture.”

Lu Zhou: “You’re too kind, but may I ask who you are?”

Principal Wu said, “This is Professor Li Changxia from our Yuhua University Institute of Nuclear Physics.”

Lu Zhou reached out his hand and said, “Nice to meet you, Professor Li.”

“Nice to meet you.” Professor Li Changxia shook Lu Zhou’s hand with a beaming smile as he said, “I’ve heard about your success, but I didn’t expect you to be this young.”

Lu Zhou smiled and said, “Professor Li, aren’t you the same?”

“Don’t be fooled by my black hair, I’m actually thirty-five years old,” Professor Li joked.

“Thirty-five is very young.” Lu Zhou paused for a second before he said, “What about Professor Gong? I heard he is the head of the Institute of Nuclear Physics.”

Professor Li gently coughed and said, “Professor Gong, he… isn’t at the research institute anymore.”

Lu Zhou: “Did he retire?”

Professor Li gave him an awkward smile as he said, “Not exactly. He’s now the deputy mayor of Hengyang’s city council and the chairman of the Municipal Committee of the Jiusan Society. He’s not participating in the school’s affairs anymore.”

I guess he went into politics.

Lu Zhou nodded and continued to ask, “Then who is responsible for the Institute of Nuclear Physics?”

Professor Li nodded and said, “Right now, I am.”

Lu Zhou looked at him, slightly surprised.

It wasn’t because he didn’t trust in Professor Li’s abilities. It was because university research teams led by middle-aged professors often didn’t have access to good resources.

Because the number of resources a research team had was often determined by the academic qualifications of the team leader.

Principal Wu could tell Lu Zhou was surprised, so he quickly said with a smile, “Professor Li is quite young, but he is very reliable. The stellarator is the main research project of our school. Due to Professor Li and his team’s efforts, we are able to cooperate with The Australian National University and successfully collaborate on the H1 Stellarator project.”

Professor Li was a little embarrassed by the compliments. He then said humbly, “It’s mainly thanks to Professor Gong.”

“Don’t get me wrong. I’m not doubting Professor Li’s abilities; I’m just a bit surprised,” Lu Zhou said. He looked at Professor Li Changxia and smiled as he asked, “Is it okay for you to give me a tour of the Institute of Nuclear Physics?”

Professor Li immediately nodded and said, “Of course it’s fine! I’ll take you there right now.”

The Institute of Nuclear Physics was located at a quiet corner on the Yuhua University campus.

It was worth mentioning that nuclear physics and nuclear engineering were two very different fields. Yuhua University was quite strong at the latter, while they were weaker at the former.

Therefore, the research institute hadn't been established for long, and the scale wasn't particularly large. It was mainly formed by the school's nuclear physics department, the nuclear fusion and plasma physics research team, and the particle physics and nuclear physics research team.

Principal Wu originally planned on inviting the leadership team to come with them. However, Lu Zhou didn't want to disturb their daily routine, so he euphemistically refused the suggestion.

Besides, having too many outsiders following him made it difficult to discuss things.

Lu Zhou then followed Professor Li Changxia to the Institute of Nuclear Physics. Professor Li gave Lu Zhou a simple tour around the place while talking about the latest international research on controllable nuclear fusion.

They began to talk about the ITER project's development, and Professor Li Changxia started to get carried away.

"Right now, international research on controllable nuclear fusion is progressing on the highway. According to ITER's project schedule, they plan on building a commercial demonstration reactor in Paris by 2025. Our country is also planning on building one, also by around 2025. If everything goes well, controllable nuclear fusion might become this century's greatest technological breakthrough."

Lu Zhou: "But it seems like you guys aren't being valued?"

Li Changxia smiled awkwardly as he said, "It's because there's still a long way until 2025."

After walking around the research institute, the pair then arrived at Professor Li's office.

Lu Zhou was a bit tired from all the walking, so he sat down on the office sofa.

Li Changxia sat across from him. He then ordered his PhD student to pour two cups of tea.

“Speaking of which, I haven’t had the chance to visit you. I have some questions regarding plasma physics, and I don’t know if you mind answering them?”

Lu Zhou sipped some tea and smiled. “There’s no need to be polite, ask away.”

Professor Li nodded. “While conducting research on the ion cyclotron wave and plasma coupling process, we discovered that the ion cyclotron wave and plasma coupling process is difficult to carry out. Do you have a good solution for this?”

Lu Zhou thought for a moment before he said, “I’ve encountered a similar research problem when I was at the PPPL. The thesis should be on the Physical Review Letters. I don’t remember the exact issue, but you should be able to find it.

“If I recall correctly, according to the thesis, by increasing the central plasma density or the scraping layer density and reducing the density gradient of the parabolic or exponential decay region, you should be able to make the ion cyclotron wave better at plasma coupling. If you are unsure, you can try to use a plasma model to numerically simulate the coupling process of ion cyclotron waves and plasma.”

Professor Li nodded as he wrote down Lu Zhou’s words in a notebook.

Lu Zhou then asked in a relaxed tone, “Is there any other question?”

“Yes, actually a bit more.”

Professor Li Changxia used this opportunity to consult Lu Zhou on some of the theoretical problems he encountered in research.

Lu Zhou answered all of the questions to the best of his ability.

Time quickly passed by; they had already spent an hour sitting in this office.

Professor Li closed his notebook and smiled as he said apologetically, “Sorry for wasting so much time.”

Lu Zhou smiled as he replied, “It’s fine. These discussions give me inspiration as well.”

He paused for a second and said, “Speaking of which, how is the H1-Heliac doing? I didn’t see it when I was walking around the research institute.”

When Professor Li heard Lu Zhou mentioned the H1 Stellarator, he couldn’t help but reveal his difficulties. “It might be difficult if you want to see it. The supporting facilities only completed the construction bidding last year in October, and it might only be completed this year.”

“That’s so slow.” Lu Zhou shook his head and said, “I remember this project began in 2017, right?”

“Yeah,” Professor Li said. He suddenly looked somewhat helpless. “But there’s no other way. Professor Gong suddenly withdrew from the project, plus our school ran into some problems. Actually, we didn’t want to delay it for so long.”

As Lu Zhou looked around the office, he nodded thoughtfully.

After a moment of silence, he finally began to talk about why he came here today.

“Speaking of which, the STAR Stellarator Research Institute in Jinling is about to finish constructing.”

Professor Li was full of envy. Lu Zhou paused for a second before he threw out an offer.

“Are you interested in joining us?”

Chapter 495: Arrival of the Visiting Team

A bright silver airplane left a white trail across the blue sky.

The thirty people visiting group headed toward the Max Planck Institute, carrying the future of Chinese controllable nuclear fusion on their shoulders. According to the cooperation agreement between the two parties, they will receive simple training for the transfer of the WEGA Stellarator.

In their original plan, Lu Zhou was going to travel with them.

However, he didn't end up on their flight. Instead, he arranged his flight to be three days later.

This was because, on the day the Chinese experts departed, the experts from the Max Planck Institute arrived at Jinling International Airport.

The German engineer had a wrinkly face; his hat almost touched his tall nose bridge. He carried his suitcase and got off the airstair.

Box..

He squinted as he looked at the airport terminal building. He then said to his colleague, "This place has changed a lot."

The red-haired, slightly younger-looking engineer raised his eyebrows.

"You've been here before?"

"That was from ten years ago," the old-fashioned engineer said as he opened his wallet and rubbed the photo inside. He then casually added, "If you live in Berlin, you won't see any obvious changes over a 10 year period. However, you can see the differences every year here."

"Berlin, right? There are actually some changes."

“Oh yeah?”

“Ever since Angela Merkel opened the gates for the immigrants, we’re seeing new things on the Frankfurter Allgemeine Zeitung newspaper every day.”

When the old engineer heard the young engineer’s joke, he laughed while shaking his head.

“Keep these things private, don’t let other people hear them.”

“I know, I know.” The young engineer looked at the people picking them up and paused for a second. He then narrowed his eyes and said, “… A few thousand nanometers wide wire, do you really think they can do it?”

It wasn’t that he looked down upon China’s ability in science and technology innovations. After all, Europe had been weak ever since the latter half of the 20th century; they didn’t have the right to look down on anyone.

However, technology innovation was one thing, being able to take the technology out of the laboratory was another.

In fact, ever since 2014, people had been able to achieve in laboratories a couple of dozen nanometer width graphene nanoribbons. Up until now, there had even been laboratories that had been able to create a wire seven atoms wide. However, this technology had remained in the laboratory so far.

This was the biggest gap between academia and the industry.

Half a century ago, if some scientist found a new compound or a simple synthetic method for an important industrial material, they might become rich overnight. However, these things rarely happened anymore.

More often than not, the academic community would produce a beautiful result but the industry would take ten or even decades to digest the technology. The industry might even eventually prove that it was useless.

Due to Lu Zhou's success on lithium anode materials, the Helmholtz Association of German Research Centres noticed the potential in carbon-based superconducting materials ever since the SG-1 material was created. However, when they did an industry analysis on the material, due to costs, production, and various other difficulties, they decided to give up on this material.

However, someone had suddenly completed the task that they had previously thought was impossible. They were astonished when they heard the news.

After all, China wasn't particularly good at nanotechnology…

"Looking at the samples they sent, they actually did it."

"Unbelievable."

"Yeah, unbelievable." The old engineer paused for a second before he said, "But isn't that why we're here, to figure this thing out?"

At the airport VIP entrance that was on the other side of the airport.

Yang Xu stood next to Lu Zhou and looked at the airplane not far away. Suddenly, he asked, "Actually, I always wanted to ask, why are the people from the Helmholtz Association of German Research Centres here?"

Lu Zhou: "It's normal. You can't expect a group of plasma physicists to also be good at materials science, right?"

Yang Xu replied with a joke, "Isn't there someone like that standing right here? Good at mathematics as well."

Lu Zhou paused for a second before he realized that Yang Xu was talking about himself. He smiled and shook his head.

“It’s totally different.”

While they were talking, the German visiting group already stepped off the airstair.

Lu Zhou began to walk toward the airstair.

The old engineer walked in front of the team. He took off his black hat and extended his callus-filled hand.

“Hello, Professor Lu, I am Rand Ulic from the Helmholtz-Zentrum Berlin for Materials and Energy. This is my colleague, Simson Eugene.”

“Hi, I’m Lu Zhou.” Lu Zhou shook hands with this Geman engineer as he looked at him with surprise. With a smile, he asked, “You speak Chinese?”

“I worked at Jinling for two years. I’m not very good at it, but I know a little,” the serious old man smirked and said in a funny tone.

“Really? It sounds good to me,” Lu Zhou said. He then gave a friendly smiled as he introduced the three people standing next to him. “This is the director of the Institute of Materials Science at the Institute for Advanced Study, Yang Xu. These two are the general manager of Baosheng Group, Sun Chengwu, and chief engineer, Mr. Cao Ganwei.”

“On behalf of Baosheng Group, I would like to welcome you all.” Sun Chengwu shook Ulic’s hand and said with a smile, “Our company has prepared a hotel for you. Are you going to leave your luggage at the hotel or do you have other plans?”

Ulic: “We can go to the hotel later, can you guys take us to the factory first?”

Sun Chengwu paused for a second. Obviously, he didn't expect the Germans to be in such a rush. He then glanced at Lu Zhou.

When General Manager Sun saw Lu Zhou nodded, he looked at Professor Ulic and said with a smile, "Of course, no problem at all."

The German visiting group wasn't large; there were only six people there. However, most of them were top carbon nanomaterials experts at the Helmholtz-Zentrum Berlin for Materials and Energy.

After the group boarded their cars, General Manager Sun sat next to Lu Zhou and couldn't help but ask, "Why are these German folks in such a rush?"

When Lu Zhou heard General Manager Sun's question, he smiled.

"For example, when you were in school, when your friend who usually got seventy or eighty in a test, suddenly scored 120 in the latest test, what would you think?"

Yang Xu thought for a moment before he replied, "Depends on the grading system?"

"The grading system doesn't matter." Lu Zhou shook his head and said, "Regardless of the grading system, you will definitely wonder how he did it, whether something fishy happened."

Manager Sun hesitated and said, "So, you're saying they think we're tricking them?"

"Anyone would be extra cautious when it came to important cooperation like this." Lu Zhou paused for a moment before he said, "We just have to prove it to them that we're legit."

Chapter 496: Conquering The Germans With Technology

Not far from Jin Ling University, the Baosheng Group factory was located in the municipal government's newly planned high-tech zone.

There was a piece of large production equipment in the middle of the spacious factory.

From the outside, this equipment might look a bit strange, or rather, a bit elementary. It almost looked like something that was pieced together in a hurry.

If someone didn't introduce it, no one would guess that this non-science fiction looking thing was actually the core equipment in the production of thousand-nanometer wide graphene wires. No one would ever think that the silver strand between the opening and closing metal plates was actually the SG-1 wire, which was worth more than its weight in gold.

Of course, that was only for the time being.

Once the production and equipment improved, and the production of scales goes up, the cost would naturally come down.

Box..

Suddenly, they heard footsteps coming from outside the factory.

When the engineers inside the factory noticed the sound, they turned to look at the door. They then saw a group of people walking behind General Manager Sun and Engineer Cao.

An engineer wiped the sweat off his face. When he saw a young man smiling with General Manager Sun, he couldn't help but curiously ask his colleague.

"Who is that?"

"Which one?"

"The one next to Manager Sun."

“It’s Lu Zhou, didn’t you watch the news?”

“Lu Zhou? The one that won the Nobel Prize?”

“Of course!”

“Amazing… The Nobel Prize laureate is talking about research at our factory, so this must be going on the news tomorrow?”

It wasn’t just the news; it might even cause the stock price to soar.

Superconducting materials wasn’t a popular topic within the A-shares industry. However, once Lu Zhou’s name was involved, the situation was completely different.

After all, everyone in the world knew how hot the lithium battery market was doing.

The engineers whispered a few words to each other. When they saw General Manager Sun’s team walking over, they shut their mouths.

With Engineer Cao leading the way, the German experts walked up to the equipment at the center of the factory. They finally saw the legendary machine that could mass-produce thousand nanometer-sized graphene nanoribbons.

Simson Eugene had a tinge of suspicion and contempt in his heart when he looked at this featureless machine.

Just looking at it from the outside, he couldn’t believe that this simple equipment could work on the nanometer scale.

However, his face soon began to look more and more dignified. Finally, his eyes were glued to the equipment, and he couldn’t look away.

The lines of silver wires were connected between the two metal plates, and the slightly thinner metal plate was connected to a sieve-looking ring-shaped object, which converged to a thumb-size ring.

Even though the speed of the metal plates opening and closing was as slow as a snail's movement, it was still producing wires…

Looking at it from the outside, he had no idea how they managed to do it.

Ulic stood next to Eugene as he asked in a serious manner, "Is this it?"

Lu Zhou smiled and explained in a relaxed tone, "This is the core of the entire production process. You can interpret it as the wire drawing machine of the cable production line… However, these two things are completely different in principle."

Eugene couldn't help but ask: "Are you sure… this thing is producing graphene wires that are only a few thousand nanometers in width?"

Lu Zhou glanced at him and said, "Listening to me alone isn't that convincing. If that's the case, you can take a sample from the product and we can do a test on it together."

Since Lu Zhou said this, Eugene didn't hesitate anymore. He walked next to the machine, and with the help of another Chinese engineer, he took a short piece of the SG-1 wire and placed it into his pre-prepared sample bag.

They all walked into the product quality testing room. When the red-haired German engineer saw the scanning electron microscope, he took the initiative to ask.

"Can I do it?"

Lu Zhou made a welcoming gesture. "Of course you can."

Eugene walked up and carefully inspected the equipment. He placed the sample onto the device and skillfully operated a fine probe through a computer. He aimed at the thousand-nanometer wide SG-1 wire.

Soon after, the probe gave the feedback data to the computer.

Eugene looked at the data collected by the scanning electron microscope and the simulated three-dimensional atomic structure diagram. It wasn't just Eugene, but even Professor Ulic and the other four German experts looked bewildered.

Eugene couldn't believe what was happening in front of his eyes; it was like he was grabbing onto his last strand of hope. He then asked, "What about its superconductivity?"

"I knew you would probably ask this." Lu Zhou looked at the researcher standing next to the scanning electron microscope and said, "Show it to them."

The wires were removed from the scanning electron microscope and transferred onto another experimental equipment.

The Keithley Model 2182A Nanovoltmeter and Keithley Model 6220 current source were installed on this piece of laboratory equipment, as well as pipelines and temperature controllers for liquid helium.

The final measurement was obvious; the "resistance/temperature" curve quickly fell to the bottom at the exact same time when the transition temperature was met. This was just like the graph Professor Keriber observed at the Institute for Advanced Study.

Even though Eugene didn't want to believe it, he couldn't help but become thoroughly convinced.

They actually did it…

"Unbelievable… How did you guys do it?"

Lu Zhou: “Simply put, we stack single atomic layers of rhodium metal sheet. After that, we punch holes in it and adjust the overlapping angle. Then, we use the principle of chemical vapor deposition to deposit the SG-1 material into the pores on a macroscopic scale. It’s almost like the resulting graphene nanoribbons are grown into a specific shape… This is the rough process. As for the more specific technical details, Baosheng Group’s engineers will give you a detailed explanation.”

Ulic frowned and asked a more professional question, “Single atomic layer of metal foil? How did you guys guarantee its monoatomic structure?”

Due to the sea of electrons in the metal atoms, it was very difficult for them to form a three-dimensional closely-packed structure. Theoretically, it would be very difficult to prepare a metal foil one atom thick. And even if it were prepared, it would be difficult to guarantee and maintain its monoatomic layer property.

Lu Zhou smiled and said, “We don’t need to do anything special.”

Ulic was stunned. “Don’t need anything special?”

Lu Zhou nodded as he replied, “Yes, there is a special localized large π bond in the enameling metal sheet which stabilizes the monoatomic layer structure.”

This was a research result that only came out in the past two years.

Actually, this was the reason why he chose rhodium.

Even though the price of rhodium was expensive, the monoatomic sheet could be used as a mold for a long time due to the extremely anti-oxidation properties of rhodium. Therefore, the cost was generally acceptable.

As for the exact method to prepare a piece of monocrystalline thick rhodium, it was just like the method he had previously mentioned—by reducing the weak ligand polyvinylpyrrolidone with formaldehyde.

After that, the group of German experts asked many questions, and Lu Zhou answered them one by one. For the theoretical questions that were out of his scope of knowledge, Chief Engineer Cao answered them.

They stayed in the high-tech zone until evening.

When they were leaving, Yang Xu got in the same car as Lu Zhou, and he couldn't help but speak emotionally.

"I didn't think that we could conquer the Germans with our technology."

Lu Zhou smiled as he replied, "Germany's industry technology is strong, especially in the field of precision machining and automation. We still have a big gap to catch up to. However, they're not gods, and you shouldn't think of them as omnipotent."

China was behind Germany in many technological developed areas; there was nothing they could do about that. However, since everyone was searching for a way to implement new technology, this meant that all of them had the same starting point.

With the help from the Jinling Institute of Computational Materials, Baosheng Group was fortunate enough to be at a starting point ahead of others. If everything went well, with the investment China was putting into controllable nuclear fusion, they could continue to be the world leaders on carbon based superconducting materials.

Maybe in the future, they would even be the leading manufacturing country…

But that wasn't something Lu Zhou could control.

He was only interested in research.

…

In the evening, Lu Zhou returned to his mansion at Zhongshan International. He was in his study room and on the phone with Sheng Xianfu, who already arrived in Germany.

“Did you guys arrive safely?”

Sheng Xianfu: “We arrived in Berlin yesterday, and we’re already at Greifswald now.”

“Is the WEGA at Greifswald?”

Lu Zhou recalled back to his last trip to Greifswald; he didn’t remember seeing the WEGA device.

Sheng Xianfu: “Not quite. It’s just that our first training stage will be done at the Wendelstein 7-X laboratory.”

Lu Zhou replied with a joke, “We’re paying €500 million for this training session, so be sure to try your best.”

Professor Sheng, who was holding his phone, nodded seriously.

“We will!”

Chapter 497: STAR Stellarator!

The days quickly passed by, and soon, it was already April.

The construction of the STAR Stellarator Research Institute went even faster than planned. The construction team used five or even ten times the manpower to finally complete the construction project.

After Regiment Commander Dai gave Lu Zhou the scissors to cut the red ribbon, he solemnly raised his right hand and gave him a military salute.

Even though Lu Zhou wasn't a soldier and that he didn't know what the salute meant, he could still see the eager expectation in Regiment Commander Dai's eyes.

At the same time, the WEGA Stellarator, which was disassembled and packaged, followed the visiting team's footsteps and entered the port of Haizhou.

€500 million was almost 4 billion yuan.

Box..

Even though this wasn't Lu Zhou's own money, he still felt a little heartbroken when he saw this money disappeared.

However, he knew that this money was definitely well spent.

Even though the WEGA machine had been shut down for more than five years, during these five years, the Max Planck Institute for Plasma Physics didn't just let it rust and collect dust, they still did regular maintenance on the machine.

Also, once they added up the cost of research and development, the Germans spent more than €1 billion on this machine.

Thinking about it this way, he actually got a discount.

After all, the worth of SG-1 wire technology was nowhere near €1 billion.

With coordination from the Suzhou provincial government, the WEGA Stellarator machine quickly arrived at Jinling and was sent to the STAR Stellarator Research Institute near Purple Mountain.

As Academician Pan stood in the laboratory that was under the mountain and looked at the pile of valuable equipment and parts, he was full of excitement.

But suddenly, the excited old man sighed.

“Unfortunately, we had to buy it…” Academician Pan shook his head as he said, “If only we have the ability to build one completely from scratch…”

When Lu Zhou heard him, he nearly choked on his own saliva.

We just bought the thing and now you’re already thinking about making a counterfeit?!

Isn’t this a bit greedy?

Lu Zhou wasn’t an engineer, so he couldn’t evaluate the engineering difficulty of the tokamak. However, from an outsider’s perspective, he could tell that the stellarator was much more difficult than the tokamak in terms of the engineering requirements.

Honestly, even the Americans, who designed the Stellarator, couldn’t produce one themselves. They gave up half-way through the production of their C type stellarator and decided to follow the Russians by working on the tokamak instead.

Therefore, not being able to create a stellarator was nothing embarrassing.

Specialization of fields didn’t only exist in academia; it also existed in the industry.

Lu Zhou gently coughed and said, “We just started, so it’d be fantastic if we can just follow the steps one-by-one. We don’t have to make every step perfect; we just have to make sure the crucial steps are done properly.”

Academician Pan shook his head and said, “Even though you put it like that, it feels like we’re inferior to them in some way. It just doesn’t sit well with me.”

After hearing Academician Pan, Lu Zhou went silent for a while.

Because he didn't know how to reply.

After all, not everything could be solved with an engineering blueprint.

Otherwise, that wouldn't be considered a problem.

Sheng Xianfu stood next to Lu Zhou as well, and unlike Academician Pan who was going through a roller coaster of emotions, he was so excited to the point that he began to rub his hands together.

"Do we start assembling now?"

After receiving more than a month of training in Germany, now was finally the time for him to show his skills.

Lu Zhou looked at Sheng Xianfu and nodded.

"Yeah, you can start now."

"Also, for the time being, don't install the external coils. We'll replace them with new ones when the time comes."

…

According to their original plan, after WEGA arrived in China, it would be officially renamed as STAR Stellarator.

With the staff and equipment in place, the stellarator research project had officially entered its next phase.

So far, Lu Zhou had completed two parts of the controllable nuclear fusion demonstration reactor puzzle.

One was the “eye”, which was his atom probe He3 technology. The other was obviously the “torso”, which was the STAR Stellarator.

In fact, since STAR Stellarator was the prototype for the Wendelstein 7-X, it had most of the crucial components. Lu Zhou was confident that he could update the components in such a way that STAR Stellarator could go toe-to-toe with the Wendelstein 7-X.

The key to all this was the completion of the third controllable nuclear fusion blueprint puzzle piece, the “legs” of the reactor—the superconducting magnet.

Actually, Lu Zhou already completed half of this puzzle piece.

After the SG-1 wire synthesis technology was completed, the “superconducting magnet based on carbon-based superconducting material” project had begun.

Just like Lu Zhou had expected, the superior thermal conductivity of the SG-1 wire could greatly reduce the size of the liquid helium refrigeration unit. The data on the blueprint showed that, when compared to copper oxide coils, it would decrease 20% of the engineering footprint.

And what did this 20% decrease in engineering footprint mean?

This meant that he could make STAR Stellarator’s magnetic field strength double that of WEGA’s field strength!

On the other hand, due to the 500 million yuan order and pressure from the state, Baosheng Group had been continuously expanding its SG-1 factory production capacity.

The wires they produced were directly sent to the STAR Stellarator Research Institute, where they were then modified by the STAR's engineering team into cluster coils around an arm's thickness and 3 meters in length.

These coils had a conduit that allowed liquid helium to pass through, and this maintained the SG-1 material to be below superconductivity critical temperature.

In order to produce a stable output of the magnetic field during the energization of the coil, a sturdy insulator holder was also mounted on the outside of each set of bundled coils. After all, for a sophisticated instrument like this, even a millimeter movement in the wire could lead to serious experiment accidents.

Also, the temperatures inside the stellarator were as high as the temperatures inside the stars…

Lu Zhou spent his days in the laboratory at the STAR Stellarator Research Institute as he overlooked this project in person.

After more than a month of hard work, on the first week after Labor Day, the team of STAR engineers finally completed the assembly of the last set of coils.

Lu Zhou stood in front of the reborn STAR Stellarator and wiped off the beads of sweat from his forehead.

Even though he didn't personally drill in the screws, he was involved from day one, from the design of the superconducting magnet. He knew exactly how many difficulties he had to go through to get to this step.

But thankfully, this work was finally completed.

All they had to do now… was to test his hypothesis!

Lu Zhou smirked as he looked at Sheng Xianfu, who was standing next to him. He then ordered him, “Check the installation status of each component. If there are no problems, get ready to connect the power source!”

Chapter 499: In-progress Results

Bam!

A newspaper was slammed on the table.

The big eye-catching headline made people turn their heads.

[Big News! STAR Stellarator test runs successfully!]

Even though it wasn’t heavily advertised to the public, this and other similar news still appeared in China National Nuclear Corporation’s newspaper, “China Nuclear Industry News”.

Considering the fact that the stellarator for Lu Yang was still being transported, this was probably the first time a stellarator set foot in China.

Box..

However, even though this was something worthy of celebration, it was impossible for everyone to be satisfied.

At least when Zhou Chengfu was reading this newspaper, he wasn’t happy at all.

Jiang Liang was standing next to his desk. When he read the newspaper, he secretly pouted. He looked like he was both jealous and envious at the same time.

“This kid really doesn’t care, spending €500 million in the blink of an eye.”

Zhou Chengfu was expressionless when he spoke slowly.

“It’s not like he’s spending his own money, why would he care…”

Also, after one successful stellarator ignition, it was much easier to receive additional research funding.

Zhou Chengfu glanced at the newspaper on his desk and laughed coldly.

“1 second…”

This achievement was far worse than that of HL-2A.

Zhou Chengfu picked up the newspaper; he was about to throw it in the trash can.

Suddenly, while holding the newspaper in his hand, he had an idea in his mind.

Maybe, he could capitalize on this…

…

The successful STAR Stellarator experiment opened the door for stellarators to the Chinese controllable nuclear fusion field.

Two days after the successful experiment, reporters from magazines such as China Nuclear Industry News, Science and Technology Weekly, etc ran reports and interviews on the latest STAR project. When the members of the city council of Jin Ling heard the news, they came to visit the laboratory under the Purple Mountain and to show their appreciation for the stellarator project.

Lu Zhou let Academician Pan deal with these trivial matters.

He wasn't interested in doing any media interviews before any decisive results came out; he was even less interested in the city council members.

Other than the in-progress STAR Stellarator results, the greatest joy this successful experiment brought him was probably the system rewards that came out of nowhere.

He completed two of the system's branch missions at once, which gave him various experience points—100,000 in materials science, 50,000 in biochemistry, 50,000 in physics, 100,000 in engineering, and 1,000 general points.

This was undoubtedly an unexpected surprise for him.

The total accumulated experience was over 300,000; it was not an exaggeration to say that he hit the jackpot.

While Lu Zhou sat in his office at the Institute for Advanced Study, his consciousness was currently in the system space.

He looked at his updated characteristic panel.

[

A. Mathematics: Level 7 (144,000/1.2 million)

B. Physics: Level 5 (83,215/300,000)

C. Biochemistry: Level 4 (74,000/100,000)

D. Engineering: Level 3 (5/100,000)

E. Materials science: level 5 (13,000/300,000)

F. Energy science: Level 2 (0/50,000)

G. Information science: Level 1 (3,000/10,000)

General points: 4,975 (one lucky draw ticket)

]

He leveled up both in materials science and engineering.

His materials science level was at level five now, which was the same level as his physics.

As for engineering…

Even though he wasn't really involved in engineering research, there was no harm in having more talents.

Also, a scholar that had an understanding of the engineering field often gave more constructive suggestions. Their laboratory research results were also more like to be easily applied in the real world.

After Lu Zhou closed his characteristic panel, he double-checked the branch mission of the Fusion Light mission chain before he exited the system space.

After his consciousness was brought back to his office, he stretched his back and leaned against his office chair.

It was pretty tiring sitting in the same position.

He stretched his stiff arms and looked at the clock on the wall; it was already half-past twelve in the afternoon.

He felt a bit hungry, so he got up and left his office. He then went straight to the cafeteria of the Institute for Advanced Study.

Since it was a bit past lunchtime, there weren't many people in the cafeteria.

After Lu Zhou got his food, he found a place to sit down and began eating.

Coincidentally, Yang Xu came to the cafeteria as well. He noticed Lu Zhou sitting there, so he walked over and placed his food tray across from Lu Zhou.

"What a coincidence, you're having a late lunch as well?"

Lu Zhou: "There's been a lot of work piled up, so it slightly delayed my lunch."

Yang Xu: "I really think that you should hire two assistants. Whether you need help making your coffee or not, at least they will save you a lot of trouble."

Lu Zhou: "I'll think about it. What about you? What have you been up to?"

"Mainly research-related work." Yang Xu suddenly thought of something, so he said, "Oh yeah, there's something I have to talk to you about."

Lu Zhou: "What thing?"

Yang Xu: "We hired a bunch of new people at the beginning of the year, right? Most people don't really know each other, so they're lacking a bit in cooperation and teamwork. I talked about it with Liu Bo, and we plan on organizing a sports event next month, to boost everyone's morale and friendship."

“Sure, health is the capital for scientific research. I support this,” Lu Zhou smiled and said. “Give me a budget statement, and I’ll cover the prizes.”

Yang Xu smiled and said, “I’ll remember that.”

After Lu Zhou ate his lunch, he returned to his office and switched on his computer. He began to work on his unfinished work from the morning.

A few hours ago, the STAR team finished the experimental report and summarized the plasma diagnostic data, which they sent to his work email.

After Lu Zhou opened the email, he downloaded the attachment and began to read it carefully.

[Longitudinal wave field 51.14T, plasma current 0kA, plasma confinement time 1.11s, maximum time 1.75s, auxiliary heating power 40MW, plasma line average density greater than 7.5×10^19m-1, electron temperature 9.86keV (around 1.1 billion degrees)…]

Lu Zhou looked at the data on the spreadsheet and nodded with satisfaction.

From the data alone, it seemed that the last experiment was quite successful.

We can try putting in hydrogen for our next experiment.

Also, we have to solve the supercomputer and plasma control schemes as soon as possible. Otherwise, the magnetic confinement time isn’t going to increase.

And the water-cooled divertor; if we want to accommodate higher fusion temperatures and confine high-density plasma for more than 30 minutes, we might have to redesign this component.

Lu Zhou was thinking about this in his mind.

Suddenly, he heard hasty footsteps coming from the corridor.

Soon after, he heard someone knocking on the door.

Lu Zhou closed his email and looked at his door.

“Come in.”

Sheng Xianfu was holding a newspaper as he walked in, obviously exasperated.

“This is ridiculous!”

He placed the newspaper on Lu Zhou’s desk.

When Lu Zhou looked at the headline of the article, he raised an eyebrow.

Are they… trying to provoke us?