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## The future of battery technologies: Developing a UK sustainable battery industry

As the UK's energy system moves towards renewable sources, battery technology will become more important than ever. This evening, we heard from three expert speakers about the developments in UK battery technology, and what is still needed. Dr Billy Wu, Reader in Electrochemical Design Engineering and Director of Research at the Dyson School of Engineering at Imperial College London, discussed developments in battery making and new chemistries that will be more important as demand increases. Martin Dowson, Chief Engineer for Electrification at Warwick Manufacturing Group & Electrification Director at High Value Manufacturing Catapult, discussed the challenges in the battery making, especially in those industries which will soon become heavily reliant on this technology, such as electric vehicles. Lastly, Dr Valentina Gentili, VP of Global R&D Agratas (formerly of Jaguar Land Rover), discussed the importance of supporting research and innovation at every stage of the battery lifecycle. The speakers' presentations were followed by a varied Q&A session which mostly focused on what the UK needs to do to be a world leader in this area.

Moving our energy production to more sustainable sources is crucial for reaching global net zero targets, and batteries will play a huge role in this. However, Dr Wu explained that given the current supply chain, this reliance will put our energy system in a vulnerable position. He explained that around two thirds of batteries come from China, and many of the critical elements that are needed for battery technology, such as cobalt or lithium, are sourced from only a few places. On top of this, since demand is increasing, there is expected to be global shortages of lithium by 2028, adding extra strain on the already delicate supply chain. However, Dr Wu emphasised that this scenario isn't inevitable. New technologies and methods,

such as sodium ion batteries or lithium recycling, are proving to be useful tools in easing the burden on the current supply chain. The UK can play a leading role in these new technologies, but industry will need support.

Both Dr Wu and Mr Dowson emphasised the importance of a national strategy. Mr Dowson explained the complex techno-economic status of batteries. Cost is a major challenge for new battery technology, and it can take well over a decade for new technologies to become commercially viable ones. The Faraday Battery Challenge has done a great deal in supporting new battery technology, and coordination from the Faraday Institution has set the scene for bringing innovations from universities and industry together. However, both speakers emphasised the fact that, if the UK wishes to be a world leader in this increasingly lucrative sector, innovation cannot be left to the free market since our global competitors are investing a great deal in their own innovations.

Lastly, Dr Gentili explained the importance of innovating at every stage of the battery lifecycle if the move to renewable energy is to be a successful one. For example, we need to ensure that our manufacturing capabilities innovate at the necessary pace if we wish to meet demand. Part of this will be new methods, but a large component will be making sure we have a well trained workforce ready for this area.

Overall, we heard that the UK is in a good position to be a leader in this field, but government must support the necessary innovation if this ambition is to be achieved.

*Alfie Hoar*

*P&SC Discussion Meeting, 'The future of battery technologies: Developing a UK sustainable battery industry'*

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