



Physikalisches Kolloquium

Dr. Esteban García-Tamayo

Universidad Pontificia Bolivariana, Medellín, Colombia

Bridging the Knowledge gap in Electrochemical Energy Storage: Nanotechnology Engineering in Colombia

Electrochemical energy storage in general, and Li-ion batteries in particular, have been and will be pivotal in at least three paradigm shifts: the revolution of portable electronics and the Internet of Things, the expansion of electric vehicles use and the decarbonization of the grid by allowing renewable capacity firming (tackling intermittency issues). It is expected that the global lithium-ion battery demand will quadruple by 2030. Although the global supply chain for this industry is gearing up at full speed, environmental, geopolitical and technical issues might hinder this growth. In this context our young research laboratory in nanomaterials for energy storage (LIMAE) pursues three lines of research: active electrode materials, development of resources for energy storage and circular energy storage focusing on the lifecycle perspective.

In this colloquium, I will provide an overview of Universidad Pontificia Bolivariana (Medellín, Colombia) with a particular focus on the research being done at the Nanotechnology Engineering program. Then I will shift to my research topic where I will - after a general introduction to Li-ion battery technology - share some examples of actual projects such as for example micro/nano fiber active materials for electrodes synthesized by electrospinning, the production of bacterial nanocellulose from biowaste as energy storage material, and lifecycle evaluation of the Li-ion technology.

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