



Università di Padova

Dipartimento di Ingegneria Industriale

Lunedì 8 luglio 2019 alle ore 15.00

presso l'Aula RH01, Via Marzolo 9 (ex-Fisica tecnica)

Il Prof. Steve G. Greenbaum

CUNY Distinguished Professor of Physics
Hunter College of CUNY (NY, USA)

Terrà un seminario dal titolo:

Can we make a safe battery for electric cars?

A personal perspective on the development of novel electrolytes

All major automobile companies will cease manufacturing internal combustion-powered vehicles within a timeframe measured in years rather than decades. The need for mitigating “range anxiety” without sacrificing safety presents a major challenge to present-day lithium ion technology, which has nearly reached its physical limit in energy density. New chemistries with correspondingly new materials are needed for the next generation of batteries. Replacing the graphite negative electrode with Li metal or Si/Li alloy and using low- (or zero-) cobalt cathodes are leading strategies. Sulfur-based cathodes are also under consideration. The major bottleneck in all of these current and proposed developments is the lack of a suitable electrolyte needed to eliminate the flammable liquid carbonate electrolyte solvents in use today. Among replacement candidates are low molecular mass polyethers (i.e. glymes), ionic liquids (ILs), inorganic solid electrolytes including glassy sulfides and garnet-type, and polymer electrolytes. Advantages and drawbacks of these various systems will be described. Finally, recent work on a novel non-polyether polymer electrolyte developed by collaborators will be previewed, with more extensive results presented at second focused lecture.

Il Direttore di Dipartimento
Prof. Massimo Guglielmi

Prof. Vito Di Noto
