



## Professor Jean-Marie Tarascon

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TITLE OF PRESENTATION: *Smarter batteries via the help of sensing and self-healing functionalities*

### Abstract of presentation

Batteries, as one of the most versatile energy storage technologies, play a central role in the ongoing transition from fossil fuels to renewable energy. They are becoming the heart of our society owing to the key role they play within the field of electrical mobility, grid applications and connected objects. Therefore, the enhancement of the battery performance, reliability, longevity and sustainability becomes a crucial challenge for the years to come, as it will enable to reduce their environment footprint. To address these various aspects, disruptive approaches consist in injecting sensing and self-healing functionalities within the battery to monitor intertwined complex physical/chemical processes in its core and repair electrode fracturing under real working conditions. This presentation will describe through specific examples the underlying science behind this emerging research field that enlists the use of optical sensors for screening electrolytes or spotting electrode degradation but also of supramolecular chemistry for healing electrode fracturing.

### Biographical note

Jean-Marie Tarascon is Professor at the College de France holding the chair "Chemistry of solids – Energy), But much of his early career was spent in US where he discovered the plastic Li-ion technology. Back to France in 1995, he created the European network of excellence ALISTORE-ERI and more recently the French network on electrochemical energy storage (RS2E). Tarascon's present research is devoted to battery materials/electrolytes, novel reactivity concepts, chemistries beyond Li .and sensing. He is the author of ~700 scientific papers, detains ~100 patents and received many honours, with the last ones being the 2020's Balzan prize and the CNRS 2022 Gold medal.