

SPEAKER



NAME

Professor Jean-Francis Bloch

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BIOGRAPHY

Professor Jean-Francis Bloch, (Grenoble T.U.), holds a doctorate in process engineering from Grenoble TU (France), a MSc in Mechanics (Grenoble U.) as well as a MSc (Lille U., France) in automation, production and industrial computing, and an Engineering diploma from Ecole Centrale de Lille (France).

Professor Bloch has directed doctoral theses (20). He published more than 200 publications and has been referee for more than 25 scientific international journals. In particular, he has been co-editor of the Industrial Crops and Products Journal since 2009.

Much of Professor Bloch's research has been devoted to the study of paper materials. He has focused on developing different theoretical, numerical, and experimental approaches on 3D fibrous structures and their relationship to the physical end-used properties, taking into account the multi-scales of the structures and phenomena. He studied in particular multi-physical phenomena such as coupled heat and mass transfers.

<http://perso.3sr-grenoble.fr/users/jfbloch/>

LECTURE

Jules Hammond ¹, Jean-Francis Bloch ²,
Andrew Gross ¹ and Michael Holzinger ¹

How paper can change the world – Sustainable energy generation

With a growing trend towards portable and wearable electronic medical devices, power source characteristics have become increasingly important to the product design. Here we present a paper-based bioenzymatic fuel cell as a sustainable and eco-friendly alternative to the typical lithium coin or button cell batteries found in these devices. Not only does this reduce environmental impact, but for it also offers substantially lower recycling and disposal costs. Using a paper-based construction, we have developed ultra-thin and flexible bioenzymatic fuel cells that convert glucose and oxygen into electricity. This new form factor opens up a world of possibilities for the point-of-care and wearable disposable device markets.

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