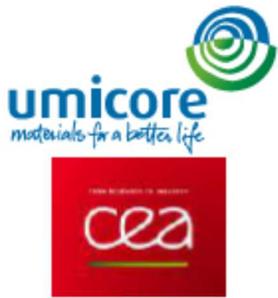




JSR participates in EU founded BASMATI project to scale –up production of inks made by environmentally friendly processing for printed batteries



Li-ion batteries are one of the key technologies in moving towards more sustainable future. On the one hand Li-ion batteries are essential part of electrical vehicles and on the other hand, they are essential for the rise of so called Internet of Things including the environmental- and wearable sensors. For the latter, batteries which are flexible, stretchable and can be applied to different base materials are preferred. One easy way to do this can be by simply printing the battery layers with conventional printing technologies. However, to do this, production of large quantities of inks which can be applied for achieving high performing battery functions is required. This is currently an issue which is addressed by the BASMATI.



The BASMATI project is financed by the biggest EU Research and Innovation program HORIZON2020. The consortium of the project consists of 10 partners from 6 different European countries. The partners are coming both from industry and academia with expertise in materials synthesis, printed electronics, batteries etc.



The general goal of the project is the scale up of production of inks with formulations which are preferably based on environmentally friendly materials. Besides being environmentally friendly the inks need to be able to function as a part of Li-ion battery when printed on a base material.



The overall projects consists from several work packages which cover the entire process including the nano material synthesis for inks, formulations of inks in laboratory scale, printing and assessment of inks and the industrial scale up of ink production.



In this project JSR Micro NV participates in two ways: (1) by providing JSR’s water based battery binders as an ingredient in the environmentally friendly ink and (2) by sharing JSR’s expert knowledge and experience in formulating environmentally friendly slurries (inks) for Li-ion batteries.



JSR binders come in a form of emulsion of binder polymer in water and they do not contain any harmful organic solvents. The binders are used to glue graphite or metal oxide particles, which are part of battery electrodes, together. The binder also glues the particles to the base material which is either aluminum or copper foil. Moreover, by using the water based binders the overall harmful solvents used to produce the electrode is 100 % replaced by water. Switching to water based production can reduce manufacturing costs by 50%. Organic solvents are considerably more expensive and require additional costs for a recovery column and environmental compliance.



JSR Micro NV has performed investigations in Energy Binder lab by making ink formulation with JSR binder and nano-sized metal oxide materials provided by partners in consortium. JSR made ink formulations suitable for different printing techniques such as Ink-Jet and Screen printing. Simply by optimizing the amount of water inside the ink and regulating the dispersion agent, inks suitable for different printing techniques can



be formulated. The generated know how from these investigation was shared with the partners as a part of joined efforts to determine a scalable ink formulation for printed batteries.

