**Advancing Functional Materials: is 'Green' an advanced function?**

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For many good reasons, chemicals, fuels and energy industries transfer to shift their product portfolio's to more sustainable, 'green' products. 'Green' is a loosely defined quality, and mostly refers to a product that has the same ('drop-in') or comparable ('substitute') functional performance as the conventional, usually fossil, product. In many cases, this is quantified through one of the versions of Life Cycle Analysis; in a very crude simplification this reduces to lower carbon emission profile. Given the still fairly low volumes of 'green' products in a fossil-dominated market, simple scaling rules will dictate higher (processing) prices and, when the volume grows, increasing price levels of limited 'sustainable' feedstocks like agro and forestry residues. With respect to the latter, the economic reality already kicked in since the price of UCO (used cooking oil) is approaching that of virgin palm oil (S600-700/ton). The same happens with the potentially much larger lignocellulosic residues market which is practically absent a few years ago and usina's had inefficient power plants to get rid of bagasse , and now there is a serious price for bagasse that approaches  and soon exceeds that of coal.

For advancing a 'green' materials (and chemicals, fuels and energy) industry, we need to understand what the function of 'green' really is. Because if it is better than conventional, a higher price or premium is justified. If it is more rare then conventional, a higher price is justified as well. Those are simple economic principles. If that is the case, then investors will become increasingly motivated, and insurers will calculate lower risks when they insure those investments (and thus lower prices). This is a fundamentally different and more positive model then the current negative schemes of penalties (carbon and other emission taxations), or environmental subsidies which destroy economic value.

So we have to look back into what 'green' really means. If green implies reduced emission profile, there is a different group of technical innovations necessary, then when 'green' implies -for instance- higher oxygen content in the 'green' building blocks and thereby lower flammability in the resulting materials. The latter is a key advanced functionality for construction and airplane materials. This contribution targets to look into a number of examples based on aviation sector where 'greenification' should come from a broad portfolio of more advanced airplanes, more advanced (bio)materials and more advanced (bio)fuels.