The profitability of the global forest industry has been dismal in recent years, due to increases in raw material and energy costs. Competition from electronic media and overcapacity in production of traditional paper grades. New value-added products or existing products with novel functionality could be a way to improve the situation. The added value could be in form of, e.g., sensors, displays or radio-frequency identification (RFID) tags, which analyze product quality, show transport conditions or streamline logistics. In this area one of the trends is to develop low-cost disposable electronics. For these to become reality, devices with reasonable electrical performance and practically negligible production cost are required. One way to reduce the manufacturing cost is to fabricate the electronics on inexpensive paper substrates by using roll-to-roll techniques ("Paper Electronics"), as an alternative to conventional electronics manufactured with batch processes on glass or polymer film substrates.

**Structure of the substrate**

**Manufacturing methods**

**Functional printing**

**Proof of concept**

**Conclusions**

- It is possible to create a paper-based substrate suitable for printed functionality by utilizing recyclable, commercially available raw materials in a multilayer structure.
- The substrate can be tailored for each device by modifying surface energy, surface roughness and surface porosity through choice of raw materials and surface treatment methods.
- Adequate barrier properties and sufficient printability can be combined.
- For large scale manufacturing curtain coating can be used.

**Mineral pigments**

- Kaolin, PCC, GCC, Talc, Silica

**Binders and barriers**

- Styrene-n-butyl-acrylate (SA)
- Styrene-Butadiene (SB)