

Going from polymer to application: design of color-changing nanofibrous sensors

Karen DE CLERCK, Ghent University, Belgium

Nanofibrous membranes possess a high specific surface area, which enhances interaction with the environment, and are thus very well suited for fast responding and highly sensitive sensor materials. Yet, some important challenges, such as providing stable sensors in an ecological friendly way, still have to be faced. In our work, stimuli-sensitive dyes are applied to provide the optical function as they result in user-friendly sensor products providing clear, visual information in a non-destructive way. However, dye-leaching, resulting in sensor instability, is currently a major challenge. Our results show that this problem can be tackled by dye-immobilization. The polymer is modified with the dye before or after electrospinning, providing a covalent linkage between both. With our research, we aim to contribute to the design of optical nanofibrous sensors produced by an ecological friendly process, being of great interest to various application fields, e.g., biomedicine.