

## **Modification of Polyacrylonitrile (PAN) fibers to improve affinity to anionic components**

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Traditionally fibers and fabrics made from polyacrylonitrile (PAN) are dyed and modified by cationic dyes and agents. The current study reports on several effective methods to improve the affinity of PAN fibers as well to anionic compounds. The modifications done on PAN contain different alkaline treatments and the application of the protein casein as a kind of biological modification of these synthetic fibers. It is shown that the dyeing properties related to dye up-take and also the fastness of the gained coloration against washing and rubbing can be significantly enhanced by the developed pretreatments of PAN fibers. Beside the dyeing properties also investigations with scanning electron microscopy, EDS-method, determination of antistatic properties and the tear strength of the fabrics are performed. In general, the developed modification of PAN fibers for dyeing processes can be understood as proof-of-concept and starting point for the development of modifying PAN fibers with any kind of anionic finishing component to reach further functionalization.

**Keywords:** surface modification, protein, polyacrylonitrile, dyeing