

Polypropylene Laue IP analysis

Part of the poster:

L. Fambri & L. Lutterotti, Structural and mechanical characterization of oriented polypropylene (fibers and woven nonwoven fabrics)

In: Current and future trends in polymeric materials

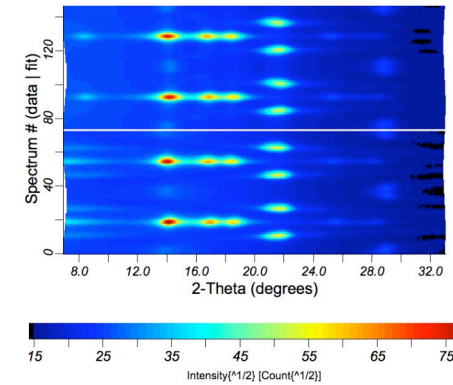
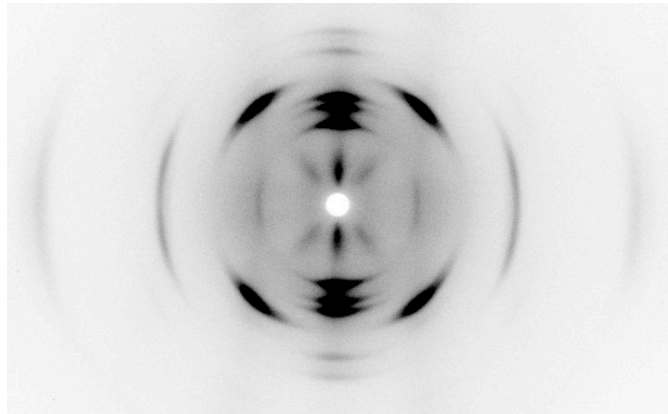
Prague, 26-30 June 2005

Polypropylene fibers: XRD analysis

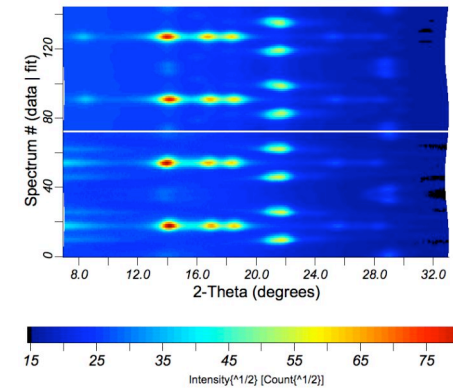
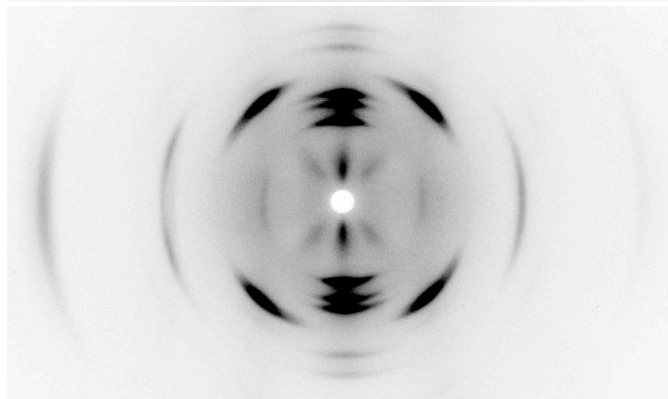
Experimental Transmission Images

Images transformed in spectra and Fitted using Rietveld Texture Analysis

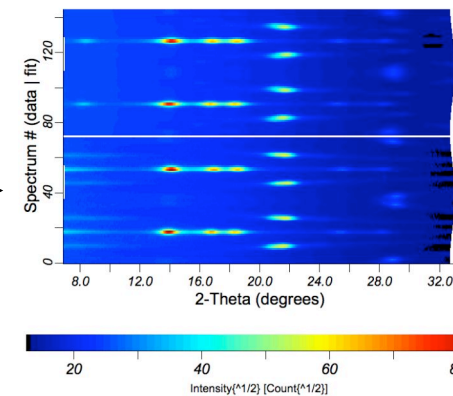
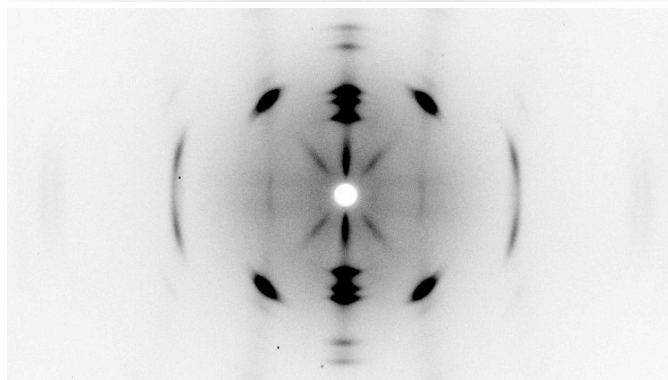
Original fibers



Creep 78 MPa



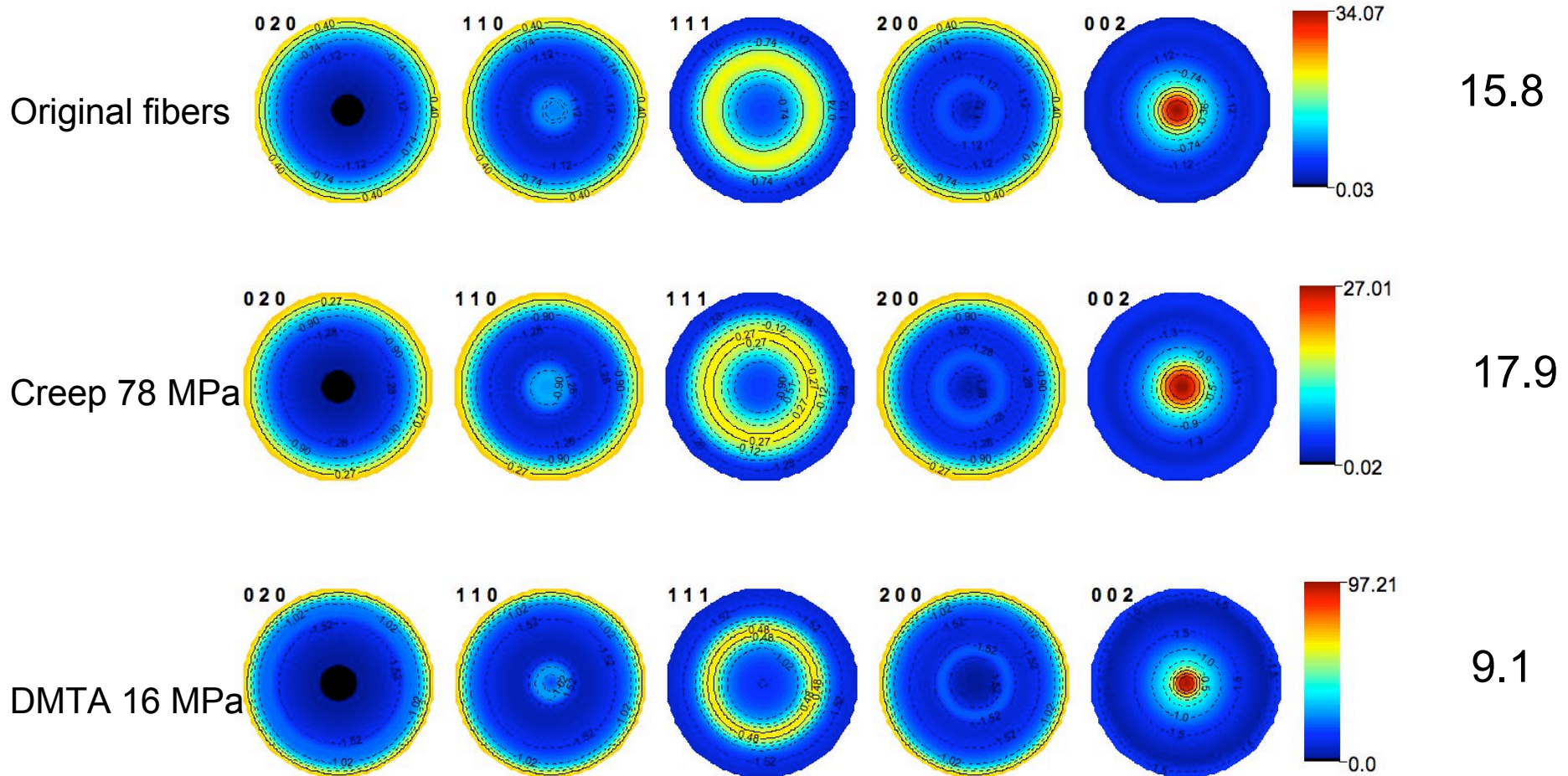
DMTA 16 MPa



Polypropylene fibers: results of Rietveld texture analysis

Reconstructed pole figures from the fitted Orientation Distribution Function (ODF)
Plotted in log scale in m.r.d. (multiple of random distribution). Higher maximum
values means sharper texture. Fibers aligned (001).

Fiber
dispersion
In degrees



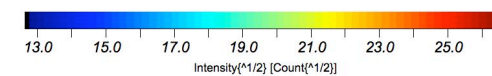
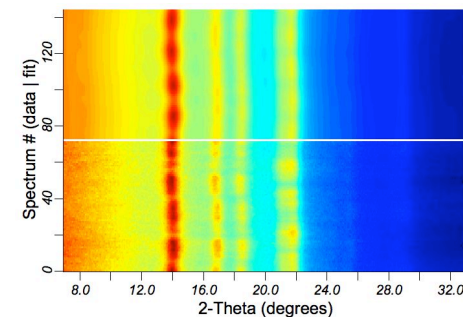
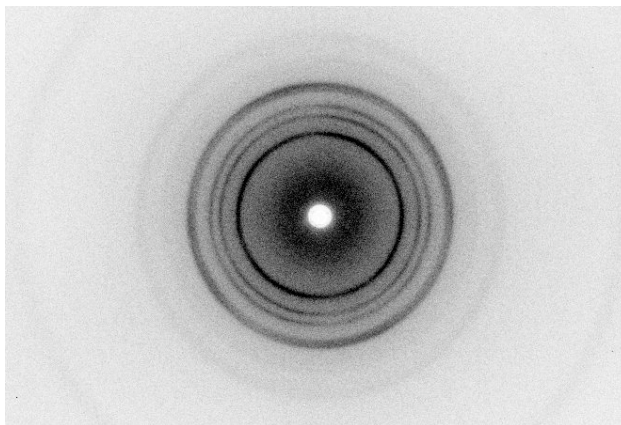
Note: the creep at ambient temperature does not change significantly the texture.
The DMTA at high temperature increase the fiber alignment by 3 times

PP Woven/not-woven

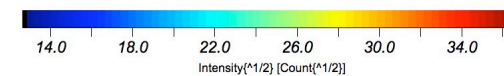
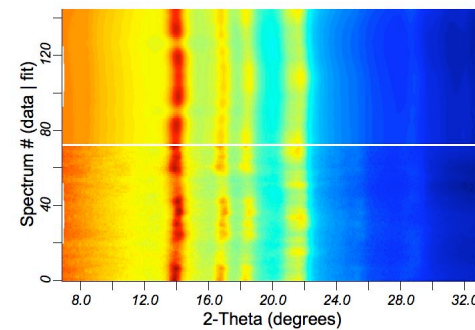
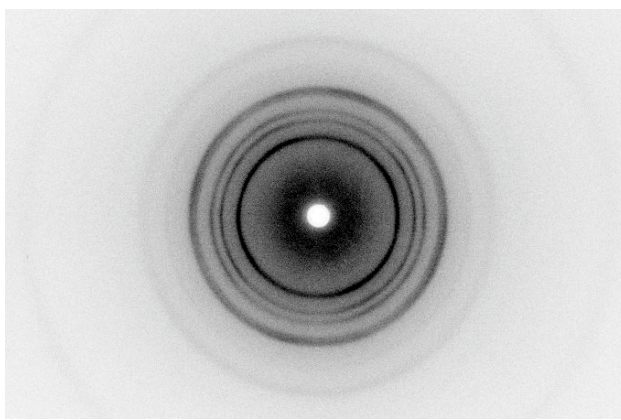
Experimental Laue Images

Images transformed in spectra and Fitted using Rietveld Texture Analysis

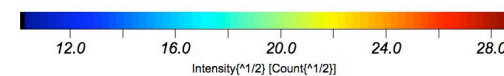
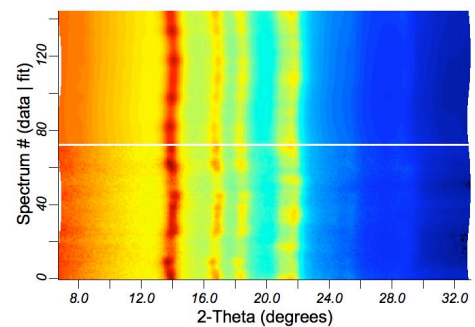
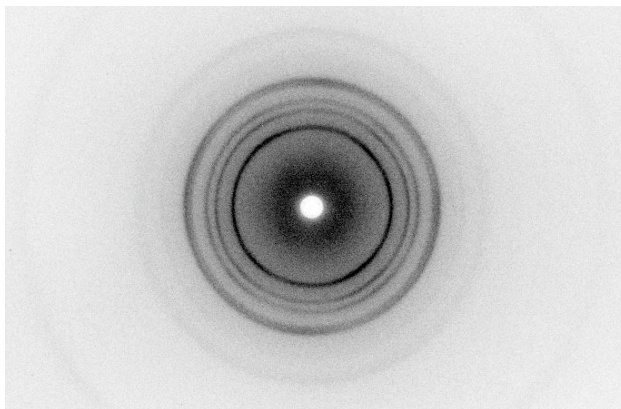
Original



Machine direction



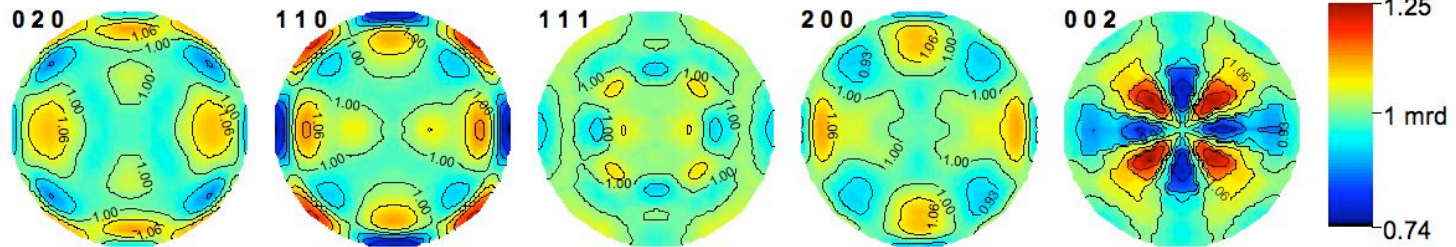
Transverse direction



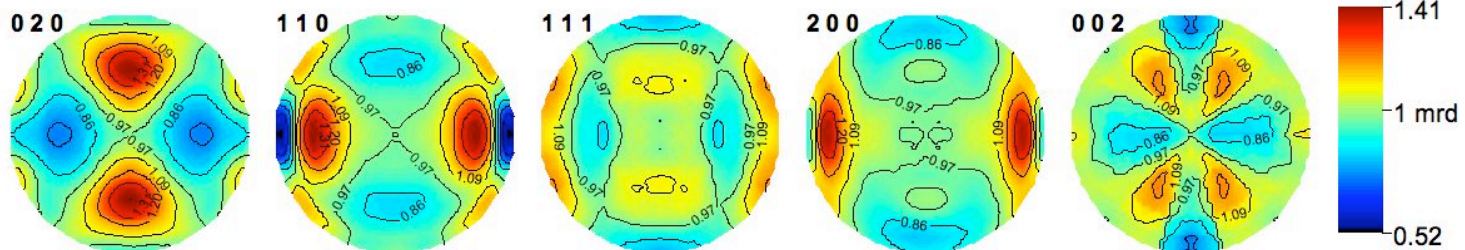
PP woven/not-woven: results of Rietveld texture analysis

Reconstructed pole figures from the fitted Orientation Distribution Function (ODF)
Plotted in m.r.d. (multiple of random distribution). Higher maximum values means sharper texture.

Original



Machine direction



Transverse direction

