



# Evolution of the Nanostructure and Viscoelastic Properties of Nitrile Rubber upon Mechanical Rejuvenation and Physical Aging

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Valentine Hervio, Bruno Bresson, Annie Brûlet, Ingrid J Paredes, Ayaskanta Sahu, et al.. Evolution of the Nanostructure and Viscoelastic Properties of Nitrile Rubber upon Mechanical Rejuvenation and Physical Aging. *Macromolecules*, 2021, 10.1021/acs.macromol.1c00054 . hal-03163944

HAL Id: hal-03163944

<https://hal.sorbonne-universite.fr/hal-03163944>

Submitted on 9 Mar 2021

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# Supporting Information: Evolution of the Nanostructure and Viscoelastic Properties of Nitrile Rubber upon Mechanical Rejuvenation and Physical Aging

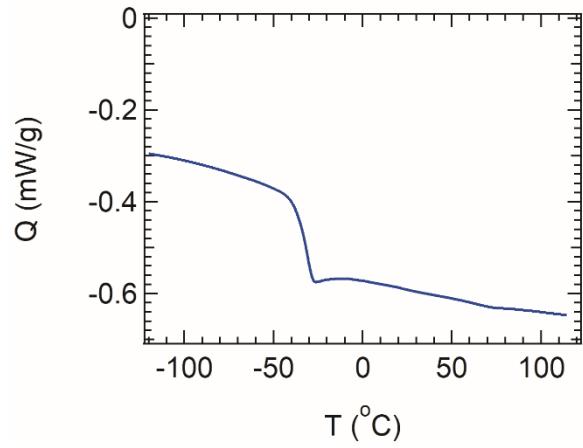
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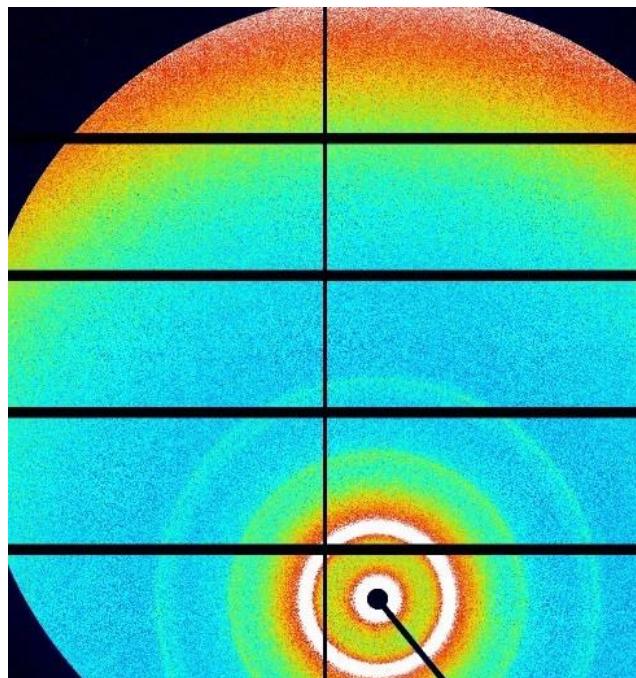
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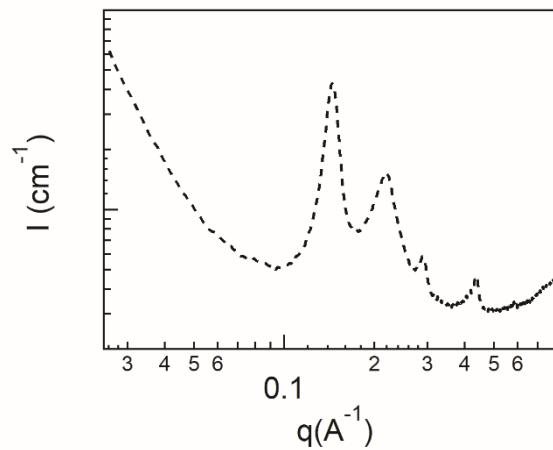
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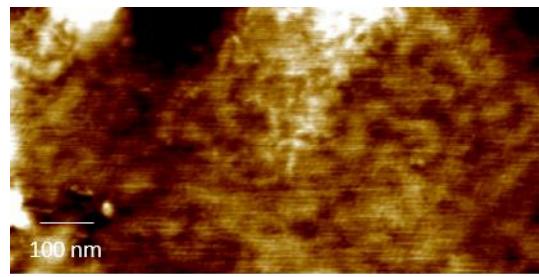
**Figure S1. Thermogram of raw NBR.** The glass transition temperature  $T_g$  is  $-31$   $^{\circ}$ C as determined from the midpoint method.



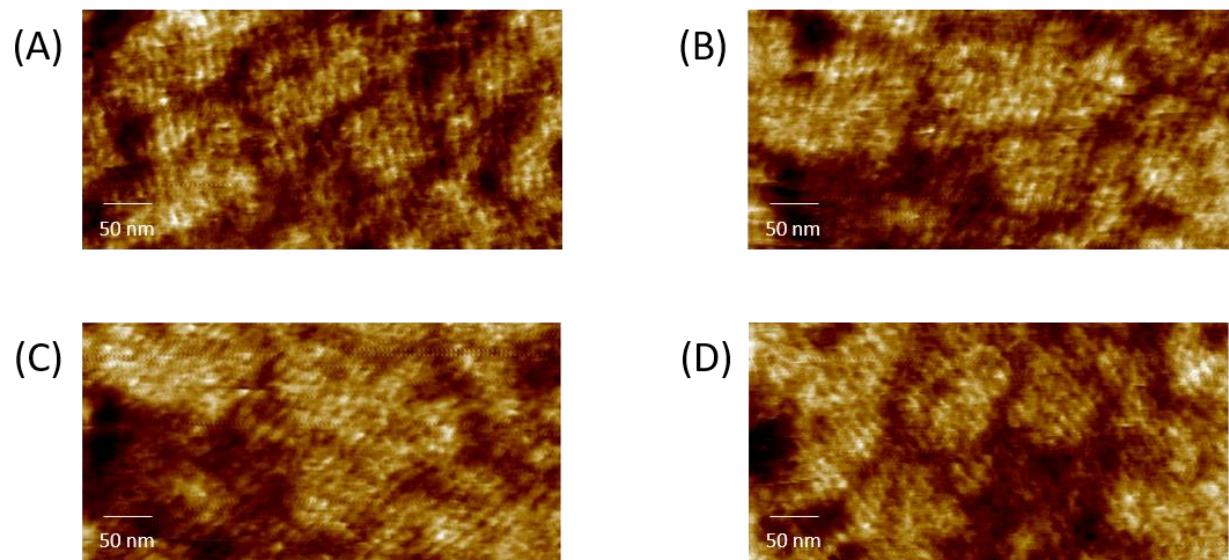
**Figure S2. 2D SAXS of solvent cast NBR.** Pattern is isotropic and azimuthally integrated to generate 1D scattering profiles



**Figure S3 X-ray scattering profile of NBR casted from toluene.** Profile is similar to that of NBR casted from cyclohexanone (solid black line in Figure 2), though the higher order peaks are not split.



**Figure S4. Height image of solvent cast NBR acquired in tapping mode.** The vertical height scale ranges from -1 nm to 1 nm.



**Figure S5. Phase images of raw NBR acquired in tapping mode.** These are obtained from the same surface area but with angles of (A) 90° (B) 70° (C) 45° and (D) 110°. The vertical phase scale ranges from -8° to 8°. It is clear that the lamellar nanodomains are intrinsic to the material and not an artifact due to oscillations.