Electronic Supplementary Information: Self-Adhesion of Poly(butadiene-*co*-acrylonitrile), *i.e.*, Nitrile Rubber, an Inhomogeneous and Associative Polymer

Valentine Hervio,[a] Annie Brûlet,[b] Costantino Creton,[a] and Gabriel E. Sanoja[a,*]

[a]*Laboratoire Sciences et Ingénierie de la Matière Molle, ESPCI Paris, Université PSL, CNRS UMR 7615, Sorbonne Université, 75005, Paris, France.*

[b]*Laboratoire Léon Brillouin, UMR 12 CEA-CNRS, Université Paris Saclay, 91191, Gif-sur-Yvette, France.*
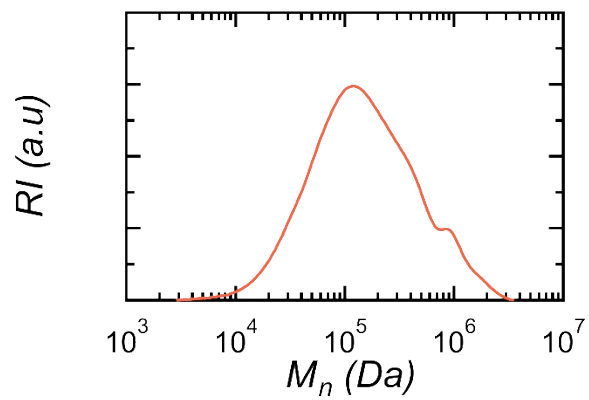
Figure S1. GPC trace reveals a weight-average molecular weight, M_w, of 127 kDa, and a dispersity index, Đ, of 2
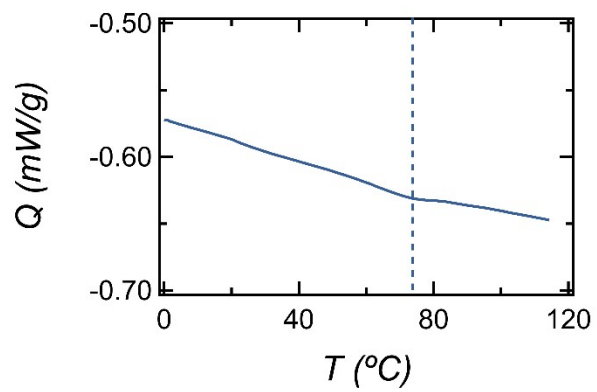
Figure S2. Thermogram of NBR. The glass transition temperature of the poly(acrylonitrile-alt-butadiene) domains is $T_g \approx 75$ °C as indicated by the dashed line.
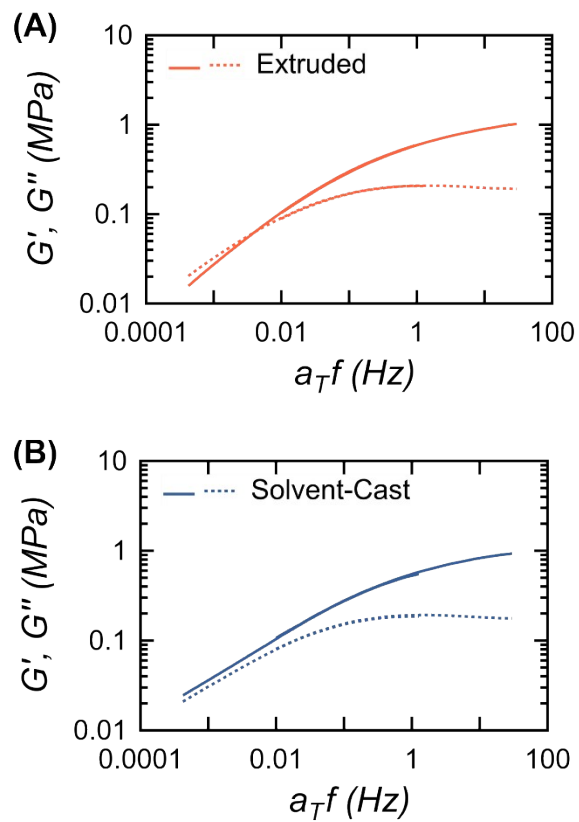
Figure S3. Storage G' and loss G" moduli of (A) extruded and (B) solvent-cast NBR. Processing NBR by extrusion (or heat-pressing) leads to a crossover of *G'* and *G"* at a lower reduced frequency, $a_T f$, and a shorter relaxation time. Adapted from Hervio *et al.*[1]
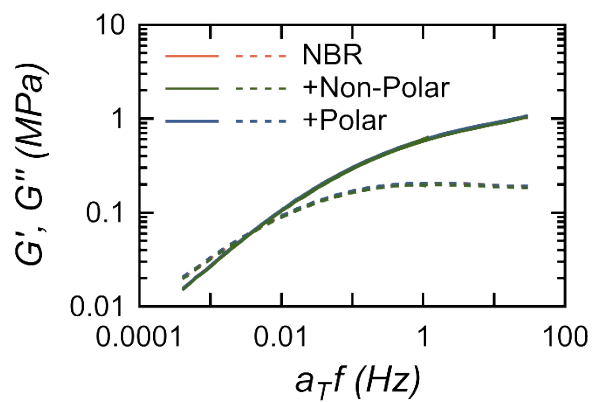
Figure S4. Storage G' and loss G'' moduli of NBR (orange) with non-polar (green) and polar (blue) tackifier. The linear viscoelastic properties remain unaffected by the presence of tackifiers at 3 wt%.
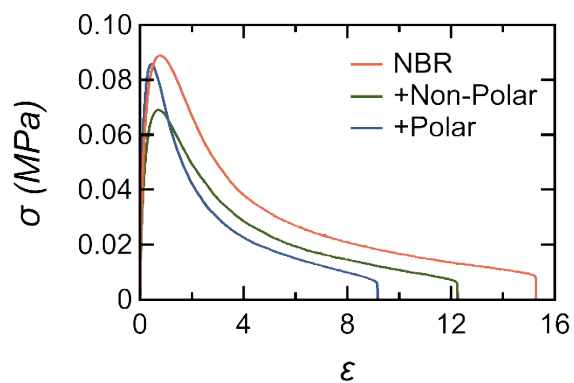

Figure S5. Stress-strain curves of NBR (orange) with non-polar (green) and polar (blue) tackifier.

Table S1. Estimate of the diffusion timescale, $t_d \sim h_0^2/D$, of organic solvents in NBR.

Solvent	D x 10^7 (cm²/s)	Reference	t_d (h)
MEK	6.07	Aminabhavi, T. M.; *et al.*[2]	1.1
Acetone	6.31	Aminabhavi, T. M.; *et al.*[2]	1.1
Ethyl acetate	3.45	Khinnavar, R. S.; *et al.*[3]	2.0
Toluene	4.1	Harogoppad, S. B.; *et al.*[4]	1.4
Dichloromethane	19.61	Khinnavar, R. S.; *et al.*[5]	0.4
Chloroform	11.45	Khinnavar, R. S.; *et al.*[5]	0.6
Tetrahydrofuran	5.57	Khinnavar, R. S.; *et al.*[5]	1.2
Isopropanol	0.11	Aminabhavi, T. M.; *et al.*[6]	63.1
Methanol	1.1	Aminabhavi, T. M.; *et al.*[6]	6.3
Pentane	$\rightarrow 0$	Harogoppad, S. B.; *et al.*[7]	$\rightarrow \infty$

Table S2. Estimate of the evaporation timescale, $t_e \sim R^2\phi\rho_L/4D\rho_S$, of organic solvents in NBR

Solvent	ϕ	ρ_L (kg/m³)	ρ_S (kg/m³)	D x 10^7 (cm²/s)	Reference	t_e (h)
MEK	0.8	805	0.13	6.07	Aminabhavi, T. M.; *et al.*[2]	118
Acetone	0.7	784	0.38	6.31	Aminabhavi, T. M.; *et al.*[2]	33
Ethyl acetate	0.7	902	0.18	3.45	Khinnavar, R. S.; *et al.*[3]	148
Toluene	0.7	867	0.05	4.1	Harogoppad, S. B.; *et al.*[4]	401
Dichloromethane	0.9	1330	0.74	19.61	Khinnavar, R. S.; *et al.*[5]	12
Chloroform	0.9	1490	0.33	11.45	Khinnavar, R. S.; *et al.*[5]	50
Tetrahydrofuran	0.8	889	0.22	5.57	Khinnavar, R. S.; *et al.*[5]	88
Isopropanol	0.2	786	0.06	0.11	Aminabhavi, T. M.; *et al.*[6]	3880
Methanol	0.2	792	0.22	1.1	Aminabhavi, T. M.; *et al.*[6]	81
Pentane	0.2	626	0.74	$\to 0$	Harogoppad, S. B.; *et al.*[7]	$\to \infty$

References

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