Slow relaxations and aging of gelatin gels

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Gelatin gels, the archetype of thermoreversible hydrogels, are obtained by partial renaturation of the native collagen triple helices upon cooling. These act as extended crosslinks for the polypeptidic coils to form an elastic polymer network. The resulting gels exhibit the slow dynamical behavior characteristic of soft glassy materials: slow logarithmic aging of the shear modulus and stress relaxations à la Kohlrausch.

Gelatin gels can be termed experimental model systems in view of the versatile physico-chemical and mechanical toolbox available (cf. Fig.1), which makes it possible to probe the relaxation dynamics in the complex energy landscape at various time and length scales, both in the linear and extremely non-linear (fracture) response regimes.

I will review the salient features of this slow dynamics with emphasis on intriguing issues which remain open for further theoretical and computational investigations.

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