

Beyond solids and liquids: the science of slime

Viscoelasticity infosheet

As we have seen, some materials are easily classified either as solid or as liquids based on their observable properties, but there are others that seem to have the properties of both.



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One characteristic of solids is that they tend to retain their shape before they break. The intriguing characteristic displayed by certain materials that tend to avoid deformation or recover their original shape is referred to as **elastic behaviour**. Additionally, if we think about liquids, they do not have a specific shape as they flow; therefore, it is normally easy to deform them. This characteristic is often called **viscous behaviour**.



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Rubber material, for example, can be deformed, showing a viscous performance, but it can also return to its original shape when the stress is removed, evidencing elastic behaviour. Jelly materials also present combined viscous and elastic performances, although, if you apply too much stress, the original shape won't be recovered.

In general, materials that possess varying degrees of both viscous and elastic properties are called **viscoelastic**, and the assessment of viscoelastic properties is essential to explain and design the different performances of the materials that surround us.