Investigating the properties of poly(caprolactone) – teacher/technician notes

*Education in Chemistry*
July 2017
[rsc.li/EiC417-medical-plastics](rsc.li/EiC417-medical-plastics)

This experiment accompanies the above article ‘Body, heal thyself’.

**Background**
Poly(caprolactone) is available to buy as instamorph/polymorph. It is often found in smart materials kits. It can be infinitely reused; simply place in boiling water to soften.

In this experiment pupils test the bounce of the polymer used by Julian’s team, poly(caprolactone). The experiment is simple and gives excellent results for discussion.

The aim of the kitchen roll tube apparatus is to provide a controlled space for the bounce so it can be measured.

**Apparatus**
- Poly(caprolactone)
- Kitchen roll tube
- A4 paper
- Ruler
- Scissors
- Glue stick
- Clamp and stand
- Thermometer
- Beaker of hot water / water bath
- Beaker of ice

**Sample results**
Mass of poly(caprolactone) = 5 g

<table>
<thead>
<tr>
<th>Temperature (°C)</th>
<th>Bounce height (cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>60</td>
<td>7 7 6</td>
</tr>
<tr>
<td>40</td>
<td>6 8 6</td>
</tr>
<tr>
<td>25</td>
<td>12 13 12</td>
</tr>
<tr>
<td>10</td>
<td>14 15 10</td>
</tr>
</tbody>
</table>