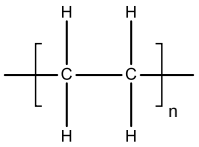
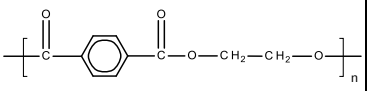
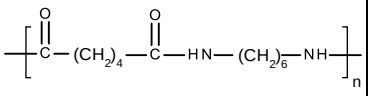
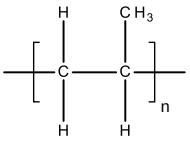
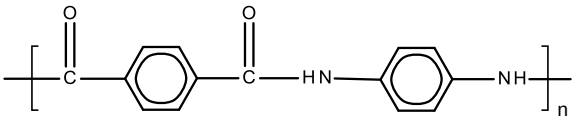
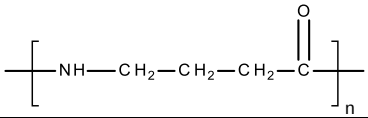
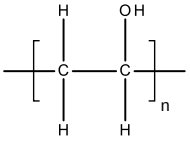
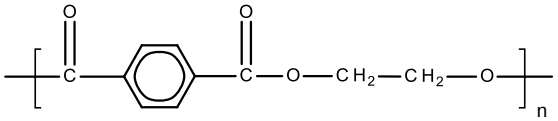
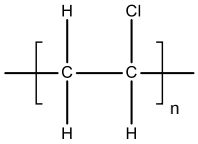
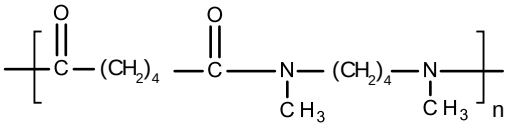
# FORCES BETWEEN POLYMER CHAINS

| | Addition | Condensation | |
|---|---|---|---|
| | | polyesters | polyamides |
| Strongest forces between polymer chains | Van der Waals' forces<br>(some may have hydrogen bonds / permanent dipole-dipole if they contain appropriate groups on the C atoms in the chain) | Permanent dipole-dipole forces (due to polar C=O bonds) | Hydrogen bonds (due to polar presence of N-H bonds within molecules) |
| Examples | poly(ethene)<br>  | terylene (PET)<br>  | nylon-6,6<br>  |

| | Polymer structure | Strongest force between polymer chains | | |
|---|---|---|---|---|
| | | Van der Waals' forces | Permanent dipole-dipole forces | Hydrogen bonds |
| 1 |  | ✓ | | |
| 2 |  | | | ✓ |
| 3 |  | | | ✓ |
| 4 |  | | | ✓ |
| 5 |  | | ✓ | |
| 6 |  | | ✓ | |
| 7 |  | | ✓ | |