Polyethylene is a thermoplastic commodity heavily used in consumer products (over 60M tons are produced worldwide every year). Polyethylene is created through polymerization of ethene. It can be produced through radical polymerization, anionic polymerization, ion coordination polymerization or cationic polymerization. This is because ethene does not have any substituent groups which influence the stability of the propagation head of the polymer. Each of these methods results in a different type of polyethylene. It is often used for packaging of food and pharmaceuticals or other materials.

**Results**

In the first heating, the endothermic peak at 107.6°C (peak temperature) with two shoulders at 113.4°C and 121.1°C (Onsets) already indicates the three-step melting of the sample. During the second heating after a controlled cooling at 10 K/min (red curve), three clear peaks were detected at 108.5°C, 117.8°C and 121.1°C. The individual phases of the LD/LLD-PE film could be separated with the DSC 204 F1 Phoenix®.