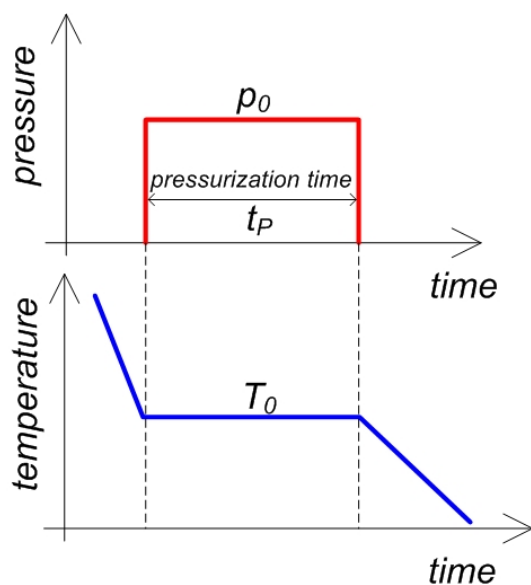




	Experiment title: PRESSURE MEMORY EFFECT IN POLYMER CRYSTALLIZATION	Experiment number: 26-02 490
Beamline: BM26B	Date(s) of experiment: From 04/09/2009 at 08:00 to 07/09/2009	Date of report: 30/09/2009
Shifts: 9	Local contact(s): Dr. G. PORTALE	
Names and affiliations of applicants (* indicates experimentalists): L.Balzano ¹ , Z. Ma ¹ , D. Cavallo ¹ ¹ Department of Mechanical Engineering, Technische Universiteit Eindhoven, P.O.Box 513, 5600 MB Eindhoven, the Netherlands		

Report:

In this experiment, we have studied the effect of pulses of pressure on the crystallization behavior of isotactic polypropylene (iPP). The thermo-mechanical history applied to samples is shown in Figure 1.



Experiments were performed fixing $p_0=1\text{kbar}$, $T_0=205^\circ\text{C}$ and varying t_P . Results show that the crystallization temperature (T_c) of the polymer (in the cooling step) is not affected by the pressurization time and is much higher than the values obtained without the pressurization step (see Figure 2).

The pressurization step has also influence on the distribution of phases in the final sample (see Figure 3).

Figure 1: Thermo-mechanical history

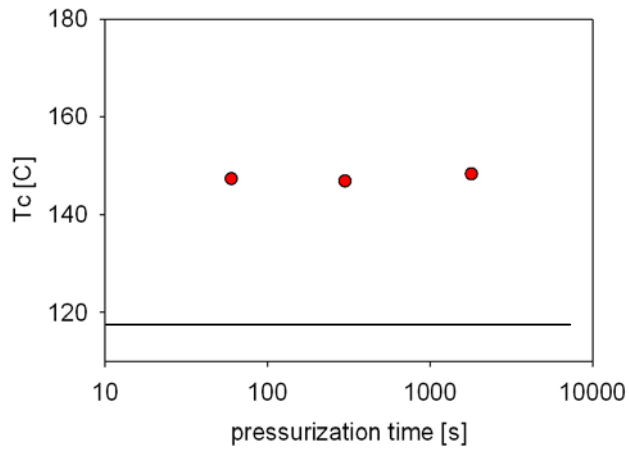


Figure 2: T_c of *iPP* as a function of the pressurization time. Horizontal line represents T_c when no pressurization is applied.

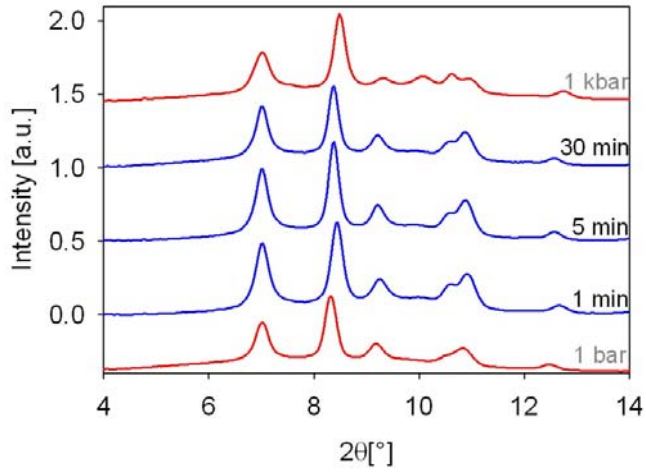


Figure 3: WAXD patterns at room temperature after different pressurization treatments.