Supporting Information for:

2-Phosphinophenolate Nickel Catalysts: Formation of Ethylene Copolymers with Isolated *sec*-Alkyl, Aryl and Functionally Substituted Alkyl Groups

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Figures of selected NMR spectra of poly(ethylene-co-olefin)s of Table 1.

NMR spectra were measured on a Bruker ARX/Avance Spectrometer at 300.13 MHz (^{1}H) and 75.46 MHz (^{13}C) at 100 °C after swelling for 1d at this temperature under N_2. Typically, 8.000 scans were collected for ^{1}H (acquisition time 4.9-5.4 s, delay 1.0 s) and at least 20.000 for ^{13}C NMR measurements (acquisition time 0.6-0.9 s, delay 0.1-0.4 s), the latter in the presence of 3-5 mg $Cr(acac)_3$. Reference was *p*-CH of the solvent $\delta(^1H)$ =7.23, $\delta(^{13}C)$ = 126.70 ppm.

Figure 1: ^{13}C NMR (C_6D_5Br) spectrum of poly(ethylene-co-4-methyl-1-pentene), obtained with catalyst **CCHH/Ni** in toluene (Table 1, entry 5).

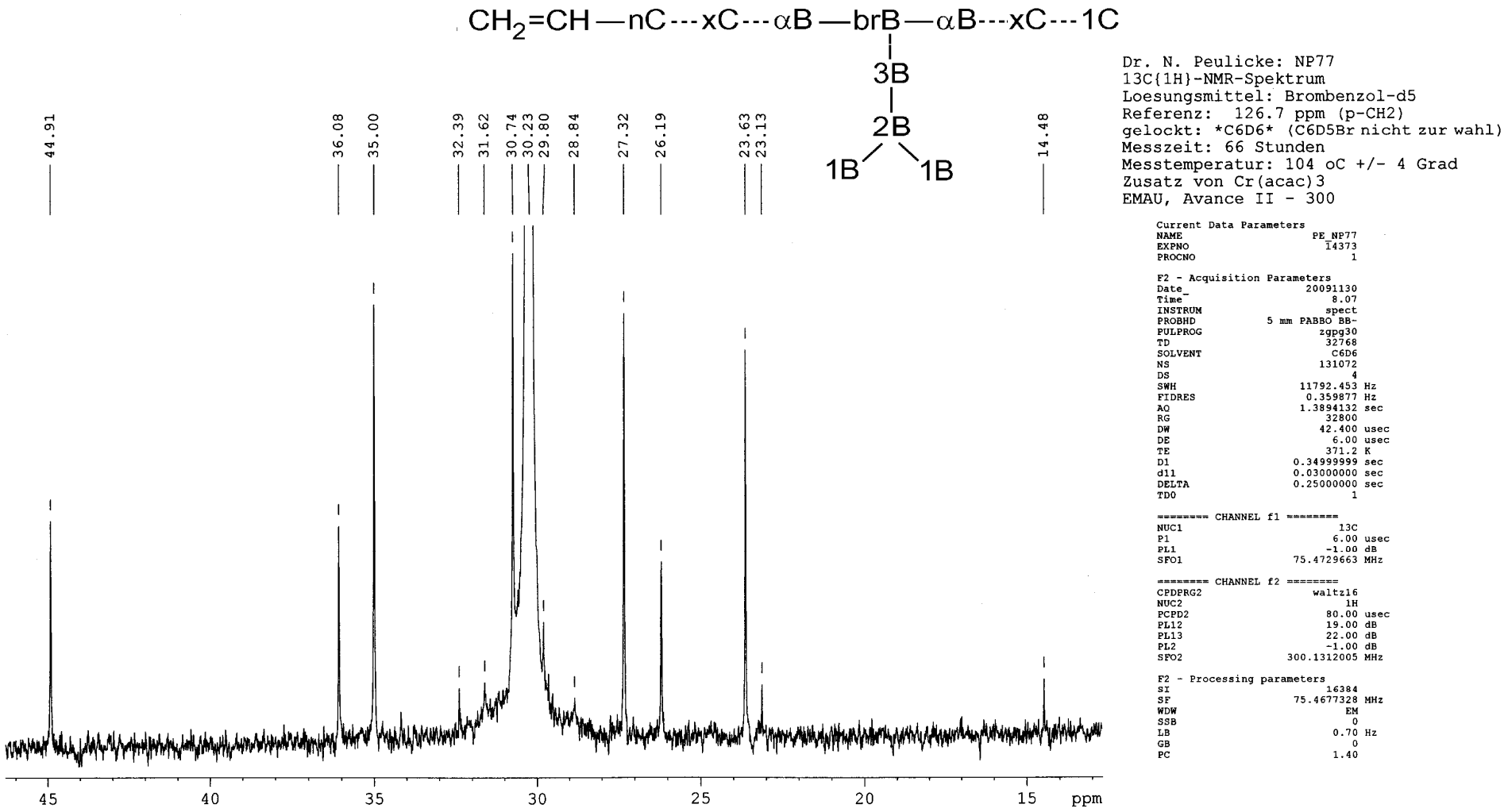
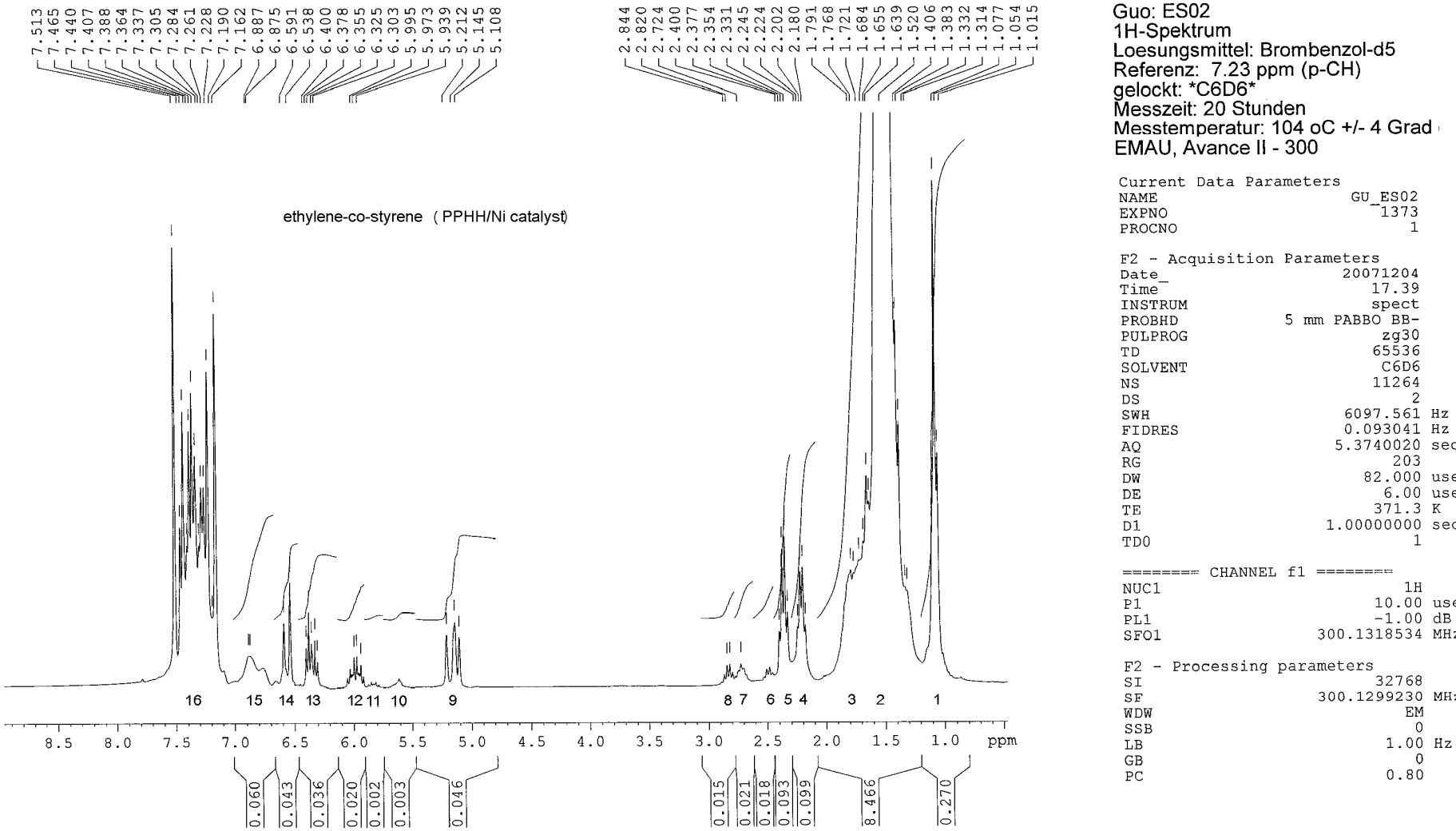


Figure 2: ^{1}H NMR spectrum of poly(ethylene-co-styrene), obtained with catalyst **PPHH/Ni** in toluene (Table 1, entry 11).



Guo: ES02
1H-Spektrum
Loesungsmittel: Brombenzol-d5
Referenz: 7.23 ppm (p-CH)
gelockt: *C6D6*
Messzeit: 20 Stunden
Messtemperatur: 104 oC +/- 4 Grad
EMAU, Avance II - 300

Current Data Parameters		
NAME	GU_ES02	
EXPNO	1373	
PROCNO	1	
F2 - Acquisition Parameters		
Date_	20071204	
Time	17.39	
INSTRUM	spect	
PROBHD	5 mm PABBO BB-	
PULPROG	zg30	
TD	65536	
SOLVENT	C6D6	
NS	11264	
DS	2	
SWH	6097.561	Hz
FIDRES	0.093041	Hz
AQ	5.3740020	sec
RG	203	
DW	82.000	usec
DE	6.00	usec
TE	371.3	K
D1	1.00000000	sec
TD0	1	
======== CHANNEL f1 ========		
NUC1	1H	
P1	10.00	usec
PL1	-1.00	dB
SFO1	300.1318534	MHz
F2 - Processing parameters		
SI	32768	
SF	300.1299230	MHz
WDW	EM	
SSB	0	
LB	1.00	Hz
GB	0	
PC	0.80	

Assignment: 1 CH_3, 2 CH_2, 3 CHCH$_2$, 4 RCH=CHCH_2 (R = H, alkyl), 5 PhCH=CHCH_2, 6 CH$_2$=CHCH_2(minor), 7 CH$_2$CHPhCH$_2$, 8 (sextet) probably PhMeCHCH$_2$, 9 CH=CH_2, 10 CH=CH, 11 CH$_2$=CH-CH$_2$CHPh, 12 CH$_2$=CHCH$_2$CH$_2$, 13 PhCH=CHCH$_2$, 14 PhCH=CHCH$_2$, 15, 16 C$_6$H$_5$ and solvent signals.

Figure 3: ^{13}C NMR spectrum of poly(ethylene-co-styrene), obtained with catalyst **CCHH/Ni** in toluene (Table 1, entry 12).

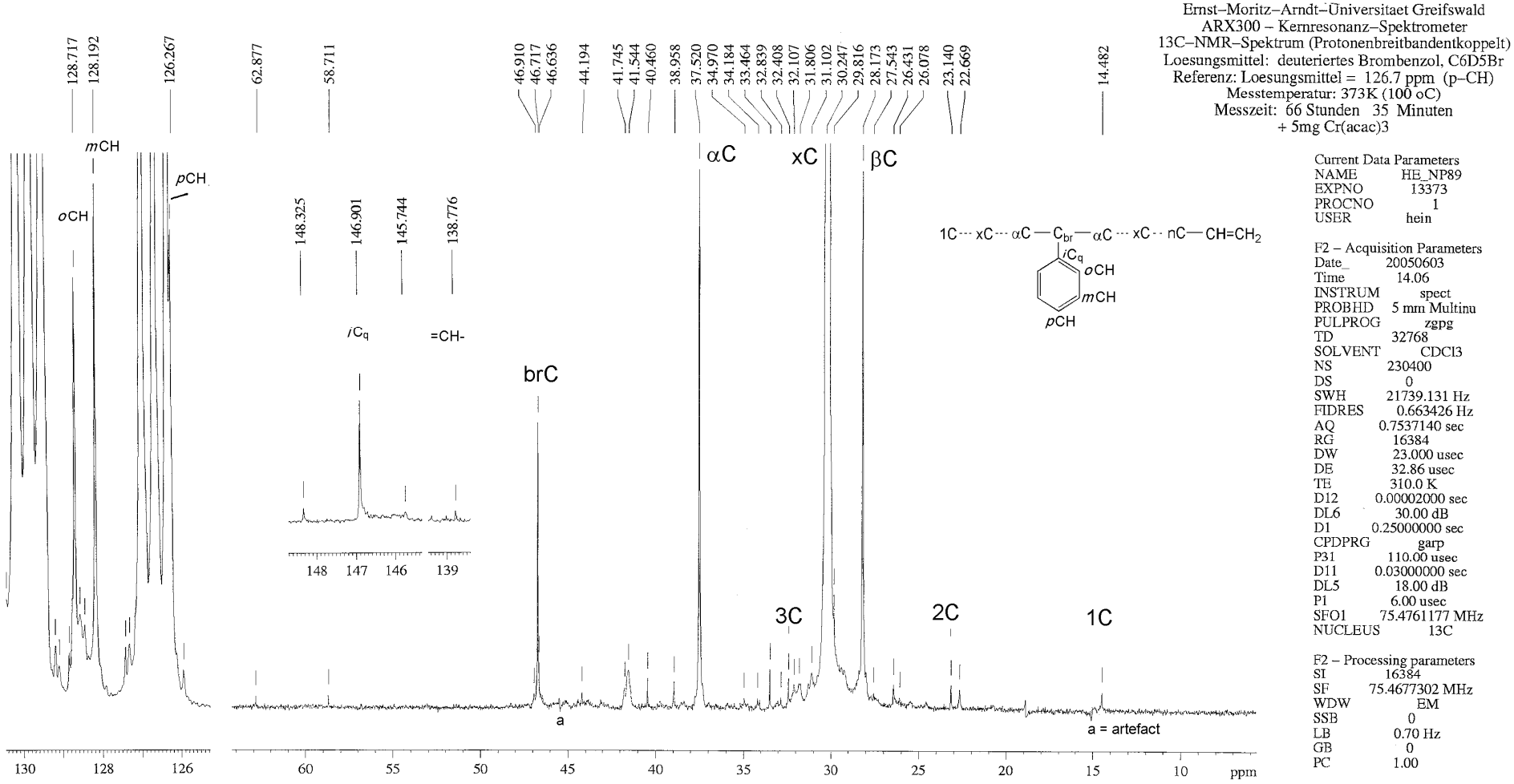


Figure 4: ^{13}C NMR spectrum of poly(ethylene-co-allylbenzene), obtained with catalyst **CCHH/Ni** in toluene (Table 1, entry 14).

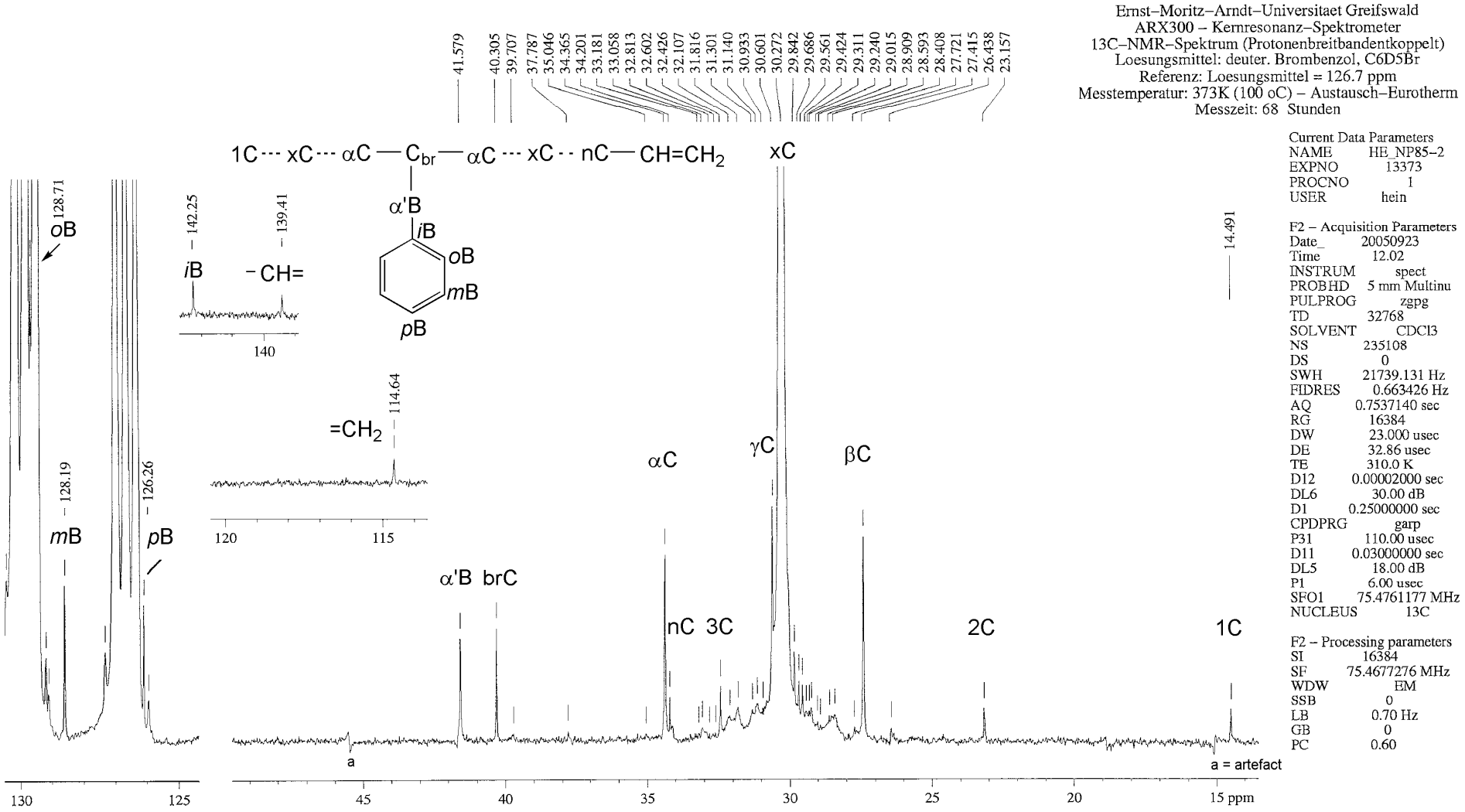
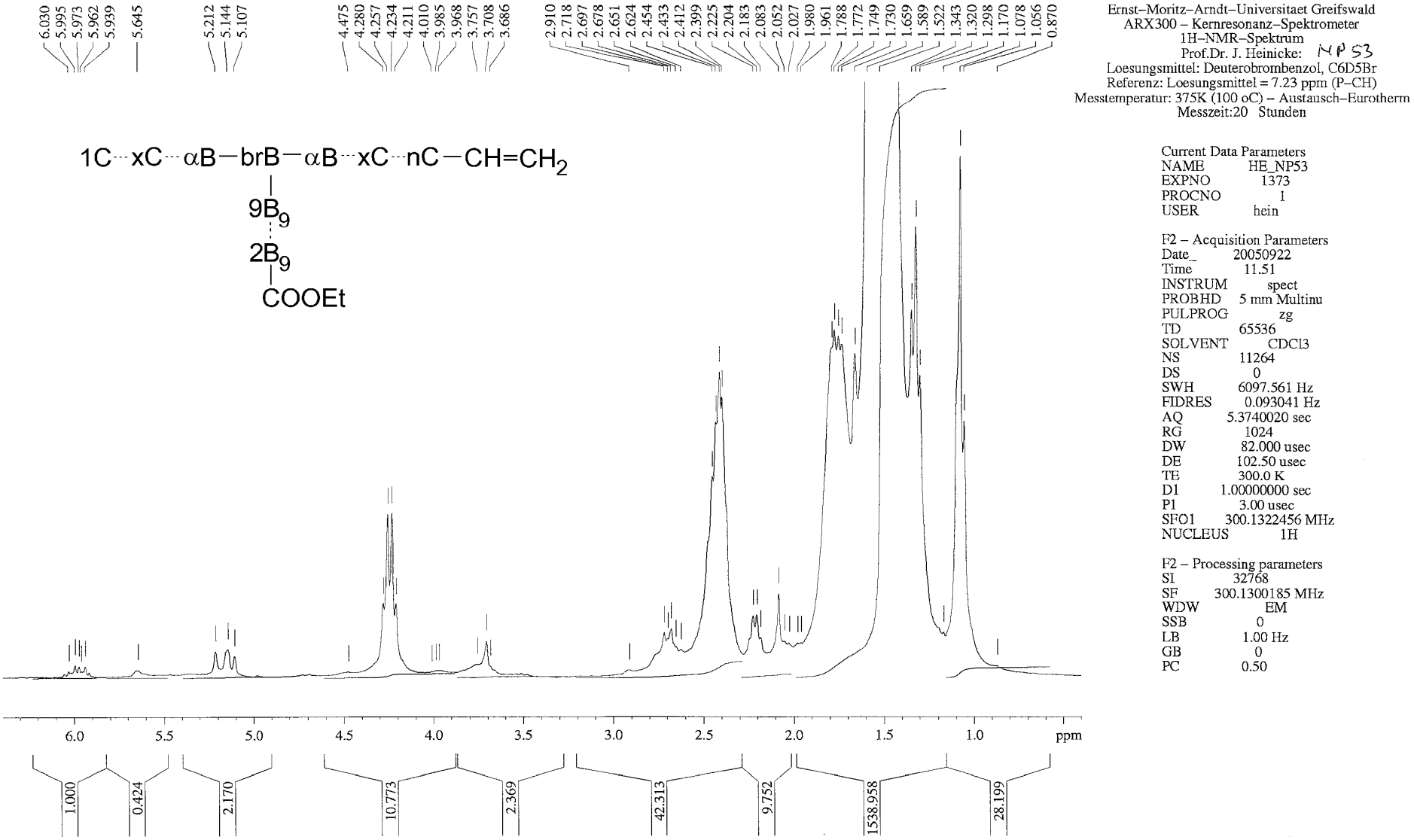


Figure 5: ^{1}H NMR spectrum of poly(ethylene-co-ethyl undecenoate), obtained with catalyst **PPHH/Ni** in ethyl 1-undecenoate (Table 1, entry 16).



Ernst–Moritz–Arndt–Universitaet Greifswald
ARX300 – Kernresonanz–Spektrometer
1H–NMR–Spektrum
Prof.Dr. J. Heinicke: NP 53
Loesungsmittel: Deuterobrombenzol, C6D5Br
Referenz: Loesungsmittel = 7.23 ppm (P–CH)
Messtemperatur: 375K (100 oC) – Austausch–Eurotherm
Messzeit:20 Stunden

Current Data Parameters

NAME	HE_NP53
EXPNO	1373
PROCNO	1
USER	hein

F2 – Acquisition Parameters

Date_	20050922
Time	11.51
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PROBHD	5 mm Multinu
PULPROG	zg
TD	65536
SOLVENT	CDCl3
NS	11264
DS	0
SWH	6097.561 Hz
FIDRES	0.093041 Hz
AQ	5.3740020 sec
RG	1024
DW	82.000 usec
DE	102.50 usec
TE	300.0 K
D1	1.00000000 sec
P1	3.00 usec
SFO1	300.1322456 MHz
NUCLEUS	1H

F2 – Processing parameters

SI	32768
SF	300.1300185 MHz
WDW	EM
SSB	0
LB	1.00 Hz
GB	0
PC	0.50

Figure 6: ^{13}C NMR spectrum of poly(ethylene-co-1-decen-9-ol), obtained with catalyst **CCHH/Ni** in toluene (Table 1, entry 19).