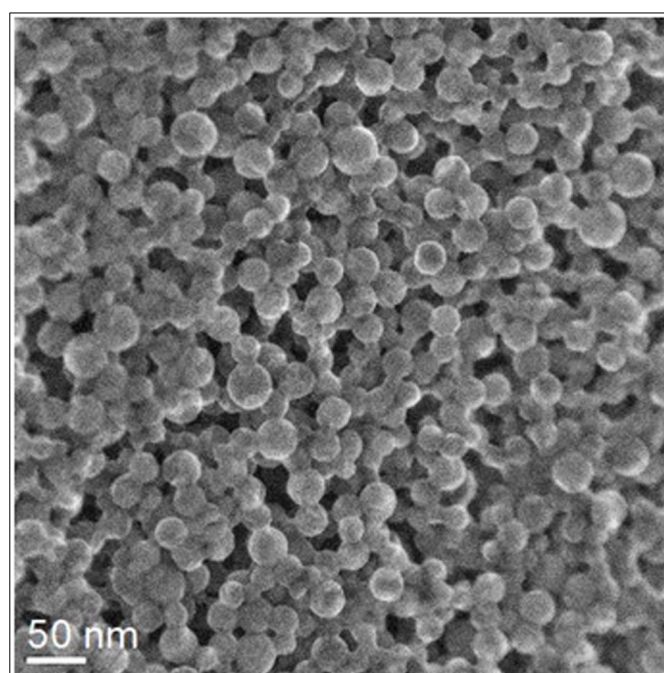


Supplementary Material

Fig. S1 - SE images of the ^{13}C -nPS showing their spherical shape and their homogeneous distribution.



Tab. S1 - Detailed data on dry weight, $\delta^{13}\text{C}$, atom% and the amount of ^{13}C (g) in each tissue of each replicate plant. ^{13}C in samples was expressed as $\delta^{13}\text{C}$ value (‰) relative to the Pee Dee Belemnite (PDB) standard. The isotopic ratio ($^{13}\text{C}/^{12}\text{C}$) of each sample R_{sample} can be calculated by the following equation:

$$R_{\text{sample}} = \left(\frac{\delta^{13}\text{C}}{1000} + 1 \right) \times R_{\text{PDB}}$$

$R_{\text{PDB}} = 0.011237$ is the isotopic ratio of $^{13}\text{C}/^{12}\text{C}$ in PDB. Atom % (% of ^{13}C in total carbon atoms) of the sample was then calculated as follows:

$$\text{atom \%} = \left(\frac{R_{\text{sample}}}{R_{\text{sample}} + 1} \right) \times 100 \%$$

The amount of ^{13}C in a given tissue was calculated by multiplying atom% by the C content in (%) and the dry weight. Type: (C) control; (T) treatment; (R1): part of the main root incubated; (R2): part of the main root not immersed; (R3): remaining part of the root system in the soil; (S): Stem; (L): leaves (for details see Fig. 1).

Species	day	Type	Tissue	Dry weight (g)	$\delta^{13}\text{C}$ [‰]	atom%	g ^{13}C (g)
<i>Betula pendula</i>	1	C	R1	0.08	-28.69	0.010743	0.00043
			R2	0.57	-28.94	0.01074	0.003061
			R3	2.32	-28.45	0.010745	0.012464
			S	2.37	-30.1	0.010727	0.012712
			L	1.8	-30.84	0.010719	0.009647
<i>Betula pendula</i>	1	C	R1	0.15	-28.49	0.010745	0.000806
			R2	/	/	/	/
			R3	0.66	-29.24	0.010737	0.003543
			S	0.95	-30.99	0.010717	0.005091
			L	1.14	-30.57	0.010722	0.006112
<i>Betula pendula</i>	1	C	R1	0.05	-29.16	0.010737	0.000268
			R2	0.5	-29.08	0.010738	0.002685
			R3	1.65	-29.50	0.010734	0.008855
			S	2.48	-30.64	0.010721	0.013294
			L	1.56	-31.14	0.010716	0.008358
<i>Betula pendula</i>	4	C	R1	0.08	-28.89	0.01074	0.00043
			R2	0.22	-28.67	0.010743	0.001182
			R3	0.78	-29.29	0.010736	0.004187
			S	1.22	-30.42	0.010724	0.006541
			L	1.6	-30.77	0.01072	0.008576
<i>Betula pendula</i>	4	C	R1	0.22	-29.28	0.010736	0.001181
			R2	0.19	-29.64	0.010732	0.00102
			R3	2.05	-29.19	0.010737	0.011005
			S	3.12	-30.87	0.010719	0.016721
			L	2.36	-31.28	0.010714	0.012643
<i>Betula pendula</i>	4	C	R1	0.06	-28.42	0.010746	0.000322

Species	day	Type	Tissue	Dry weight (g)	$\delta^{13}\text{C}$ [‰]	atom%	$\text{g }^{13}\text{C}$ (g)
			R2	0.27	-29.95	0.010729	0.001448
			R3	2.48	-29.86	0.01073	0.013305
			S	3.14	-30.93	0.010718	0.016827
			L	1.5	-32.33	0.010703	0.008027
<i>Betula pendula</i>	1	T	R1	0.13	7110.23	0.083134	0.005404
			R2	0.15	2580.07	0.038485	0.002886
			R3	1.72	-28.99	0.010739	0.009236
			S	3.73	-28.38	0.010746	0.020041
			L	1.55	-30.57	0.010722	0.00831
<i>Betula pendula</i>	1	T	R1	0.14	107.41	0.012229	0.000856
			R2	0.2	34.09	0.011429	0.001143
			R3	3.03	-28.76	0.010742	0.016274
			S	4.26	-27.92	0.010751	0.0229
			L	2.35	-30.97	0.010718	0.012593
<i>Betula pendula</i>	1	T	R1	0.02	688.89	0.018532	0.000185
			R2	0.47	-28.19	0.010748	0.002526
			R3	1.92	-28.61	0.010743	0.010314
			S	2.7	-28.82	0.010741	0.014501
			L	1.99	-31.50	0.010712	0.010658
<i>Betula pendula</i>	4	T	R1	0.15	-25.64	0.010776	0.000808
			R2	0.46	-29.18	0.010737	0.00247
			R3	2.18	-29.12	0.010738	0.011704
			S	3.44	-29.13	0.010738	0.018469
			L	1.56	-31.63	0.01071	0.008354
<i>Betula pendula</i>	4	T	R1	0.03	43.34	0.01153	0.000173
			R2	0.42	-29.42	0.010735	0.002254
			R3	2.39	-30.27	0.010725	0.012817
			S	2.77	-27.88	0.010751	0.014891
			L	1.75	-32.24	0.010704	0.009366
<i>Betula pendula</i>	4	T	R1	0.11	5.45	0.011116	0.000611
			R2	0.49	-27.88	0.010751	0.002634
			R3	2.26	-28.84	0.010741	0.012137
			S	4.03	-30.94	0.010718	0.021597
			L	2.57	-31.32	0.010714	0.013767
<i>Picea abies</i>	1	C	R1	0.02	-28.46	0.010745	0.000107
			R2	0.45	-28.34	0.010746	0.002418
			R3	1.41	-27.55	0.010755	0.007582
			S	0.7	-28.65	0.010743	0.00376
			L	0.55	-29.47	0.010734	0.002952
<i>Picea abies</i>	1	C	R1	0.16	-27.83	0.010752	0.00086
			R2	0.2	-27.47	0.010756	0.001076
			R3	1.04	-29.16	0.010737	0.005583
			S	0.81	-30.02	0.010728	0.004345
			L	0.54	-30.82	0.010719	0.002894
<i>Picea abies</i>	1	C	R1	0.05	-27.17	0.010759	0.000269
			R2	0.24	-28.37	0.010746	0.00129

Species	day	Type	Tissue	Dry weight (g)	$\delta^{13}\text{C}$ [‰]	atom%	g ^{13}C (g)
<i>Picea abies</i>	4	C	R3	0.99	-27.93	0.010751	0.005322
			S	0.98	-28.56	0.010744	0.005265
			L	0.66	-30.54	0.010722	0.003538
			R1	0.01	-29.74	0.010731	5.37E-05
			R2	0.4	-28.42	0.010746	0.002149
			R3	1	-29.10	0.010738	0.005369
<i>Picea abies</i>	4	C	S	0.9	-29.73	0.010731	0.004829
			L	0.82	-30.33	0.010725	0.004397
			R1	0.06	-27.31	0.010758	0.000323
			R2	0.29	-27.18	0.010759	0.00156
			R3	0.47	-26.41	0.010768	0.00253
			S	0.67	-28.75	0.010742	0.003599
<i>Picea abies</i>	4	C	L	0.53	-28.39	0.010746	0.002848
			R1	0.01	-26.49	0.010767	5.38E-05
			R2	0.83	-27.50	0.010756	0.004464
			R3	1.22	-27.67	0.010754	0.00656
			S	1.64	-29.03	0.010739	0.008806
			L	0.95	-29.91	0.010729	0.005096
<i>Picea abies</i>	1	T	R1	0.12	1221.86	0.024238	0.001454
			R2	0.11	-27.22	0.010759	0.000592
			R3	0.98	-27.50	0.010756	0.00527
			S	0.67	-28.10	0.010749	0.003601
			L	0.58	-30.60	0.010722	0.003109
			R1	0.08	1218.04	0.024198	0.000968
<i>Picea abies</i>	1	T	R2	0.31	-28.06	0.010749	0.001666
			R3	1.29	-28.56	0.010744	0.00693
			S	1.08	-29.04	0.010739	0.005799
			L	0.66	-31.06	0.010717	0.003536
			R1	0.09	1186.90	0.023866	0.001074
			R2	0.04	-24.54	0.010788	0.000216
<i>Picea abies</i>	4	T	R3	1.02	-19.28	0.010845	0.005531
			S	0.81	-29.06	0.010739	0.004349
			L	0.87	-29.98	0.010728	0.004667
			R1	0.08	-7.49	0.010975	0.000439
			R2	0.48	-28.48	0.010745	0.002579
			R3	2.73	-28.98	0.010739	0.014659
<i>Picea abies</i>	4	T	S	1.69	-28.82	0.010741	0.009076
			L	0.9	-30.19	0.010726	0.004827
			R1	0.08	-13.47	0.010909	0.000436
			R2	0.25	-25.53	0.010777	0.001347
			R3	0.48	-27.35	0.010757	0.002582
			S	0.47	-29.10	0.010738	0.002523
<i>Picea abies</i>	4	T	L	0.35	-29.55	0.010733	0.001878
			R1	0.02	328.71	0.014637	0.000146
			R2	0.38	11.56	0.011183	0.002125
			R3	0.8	-28.19	0.010748	0.004299

Species	day	Type	Tissue	Dry weight (g)	$\delta^{13}\text{C}$ [‰]	atom%	$\text{g }^{13}\text{C}$ (g)
<i>Quercus petraea</i>	1	C	S	0.68	-28.76	0.010742	0.003652
			L	0.65	-30.30	0.010725	0.003486
			R1	0.01	-27.29	0.010758	5.38E-05
			R2	0.13	-27.24	0.010758	0.000699
			R3	0.67	-25.88	0.010773	0.003609
			S	0.49	-26.85	0.010763	0.002637
<i>Quercus petraea</i>	1	C	L	0.01	-25.52	0.010777	5.39E-05
			R1	0.07	-28.73	0.010742	0.000376
			R2	0.13	-28.70	0.010742	0.000698
			R3	0.45	-27.72	0.010753	0.002419
			S	0.3	-28.38	0.010746	0.001612
			L	0.11	-28.97	0.01074	0.000591
<i>Quercus petraea</i>	1	C	R1	0.01	-28.19	0.010748	5.37E-05
			R2	0.04	-27.75	0.010753	0.000215
			R3	0.48	-25.72	0.010775	0.002586
			S	0.24	-27.54	0.010755	0.001291
			L	0.06	-28.23	0.010748	0.000322
			<i>Quercus petraea</i>	4	C	R1	0.03
R2	0.13	-27.78				0.010753	0.000699
R3	0.35	-26.97				0.010761	0.001883
S	0.52	-27.80				0.010752	0.002796
L	0.1	-29.26				0.010736	0.000537
<i>Quercus petraea</i>	4	C				R1	0.05
			R2	0.08	-27.70	0.010753	0.00043
			R3	0.43	-27.94	0.010751	0.002311
			S	0.26	-28.41	0.010746	0.001397
			L	0.02	-26.34	0.010768	0.000108
			<i>Quercus petraea</i>	4	C	R1	0.09
R2	0.17	-28.18				0.010748	0.000914
R3	0.86	-27.83				0.010752	0.004623
S	0.33	-29.33				0.010736	0.001771
L	0.15	-29.32				0.010736	0.000805
<i>Quercus petraea</i>	1	T				R1	0.05
			R2	0.09	-28.80	0.010741	0.000483
			R3	0.69	-29.44	0.010734	0.003703
			S	0.21	-31.40	0.010713	0.001125
			L	0.1	-31.20	0.010715	0.000536
			<i>Quercus petraea</i>	1	T	R1	0.17
R2	0.26	-19.02				0.010848	0.00141
R3	1.22	-27.49				0.010756	0.006561
S	0.7	-31.53				0.010712	0.003749
L	0.32	-29.28				0.010736	0.001718
<i>Quercus petraea</i>	1	T				R1	0.04
			R2	0.85	-14.66	0.010896	0.004631
			R3	1.69	-29.22	0.010737	0.009073
			S	0.71	-30.89	0.010719	0.003805

Species	day	Type	Tissue	Dry weight (g)	$\delta^{13}\text{C}$ [‰]	atom%	g ^{13}C (g)
<i>Quercus petraea</i>	4	T	L	0.53	-31.74	0.010709	0.002838
			R1	0.02	17.46	0.011247	0.000112
			R2	0.09	-24.82	0.010785	0.000485
			R3	0.82	-27.73	0.010753	0.004409
			S	0.46	-31.17	0.010715	0.002465
<i>Quercus petraea</i>	4	T	L	0.29	-28.65	0.010743	0.001558
			R1	0.01	168.63	0.012897	6.45E-05
			R2	0.11	2829.40	0.041055	0.002258
			R3	0.27	-27.25	0.010758	0.001452
			S	0.35	-30.28	0.010725	0.001877
<i>Quercus petraea</i>	4	T	L	0.05	-27.82	0.010752	0.000269
			R1	0	146.07	0.012651	0
			R2	0.21	4.26	0.011103	0.001166
			R3	0.78	-28.48	0.010745	0.004191
			S	0.56	-30.64	0.010721	0.003002
			L	0.14	-30.04	0.010728	0.000751