

Table S1. Class of compounds, sum of peak areas, chemistry registry numbers (CAS), and retention times of molecules identified by gas chromatography–mass spectrometry (GC-MS) in the liquid phase for depolymerization of PMMA based dental resins fragments/residues at 425 °C, atmospheric pressure and reaction times of 20, 30, 40, 50, and 60 minutes, on the technical scale.

[min]	Class of chemical compounds	RT [min]	CAS	Σ (Area.%)
20	Esters of Acrylic Acids Methyl methacrylate Σ (Área.%) =	3.659	80-62-6	100.000 100.000
30	Esters of Acrylic Acids Methyl methacrylate Σ (Área.%) =	3.658	80-62-6	100.000 100.000
40	Esters of Acrylic Acids Methyl methacrylate Σ (Área.%) =	3.661	80-62-6	100.000 100.000
50	Esters of Acrylic Acids Methyl methacrylate Σ (Área.%) =	3.653	80-62-6	100.000 100.000
60	Esters of Acrylic Acids Methyl methacrylate Σ (Área.%) =	3.654	80-62-6	100.000 100.000

Table S2. Class of compounds, sum of peak areas, chemistry registry numbers (CAS) and retention times of molecules identified by gas chromatography-mass spectrometry (GC-MS) in the liquid phase for depolymerization of PMMA based dental resins fragments/residues at 450 °C, atmospheric pressure and reaction times of 30, 40, 50 and 60 min, on the technical scale.

[min]	Class of chemical compounds	RT [min]	CAS	*+ (Area.%)
20	Esters of Acrylic Acids			
	Methyl methacrylate	3.658	80-62-6	100.000
	Σ (Area.%) =			100.000
30	Esters of Acrylic Acids			
	Methyl methacrylate	3.658	80-62-6	100.000
	Σ (Area.%) =			100.000
40	Esters of Acrylic Acids			
	Methyl methacrylate	3.646	80-62-6	100.000
	Σ (Area.%) =			100.000
50	Esters of Acrylic Acids			
	Methyl isobutyrate	3.317	547-63-7	4.696
	Methyl methacrylate	3.653	80-62-6	90.773
	Σ (Area.%) =			95.469
	Hydrocarbons			
	Toluene	4.593	108-88-3	4.531
	Σ (Area.%) =			4.531
60	Esters of Acrylic Acids			
	Methyl isobutyrate	3.299	547-63-7	4.663
	Methyl methacrylate	3.648	80-62-6	59.611
	Σ (Area.%) =			64.274
	Hydrocarbons			
	Toluene	4.552	108-88-3	12.384
	o-Xylene	6.442	95-47-6	7.185
	Mesitylene	8.315	108-67-8	4.243
	Naphthalene	12.323	91-20-3	3.652
	Σ (Area.%) =			27.464
	NIC			
	Σ (Area.%) =			8.262

NIC = Non identified compounds.

Table S3. Class of compounds, sum of peak areas, chemistry registry numbers (CAS) and retention times of molecules identified by gas chromatography–mass spectrometry (GC-MS) in the liquid phase for depolymerization of PMMA based dental resins fragments/residues at 475 °C, atmospheric pressure and reaction times of 20, 30, 40, 50 and 60 min, on the technical scale.

[min]	Class of chemical compounds	RT [min]	CAS	* _i (Area.%)
20	Esters of Acrylic Acids			
	Methyl methacrylate	3.665	80-62-6	100.000
	Σ (Área.%) =			100.000
30	Esters of Acrylic Acids			
	Methyl methacrylate	3.665	80-62-6	100.000
	Σ (Área.%) =			100.000
40	Esters of Acrylic Acids			
	Methyl isobutyrate	3.304	547-63-7	3.605
	Methyl methacrylate	3.659	80-62-6	92.771
	Σ (Área.%) =			96.376
	Hydrocarbons			
40	Toluene	4.615	108-88-3	3.624
	Σ (Área.%) =			3.624
50	Esters of Acrylic Acids			
	Methyl isobutyrate	3.299	547-63-7	3.893
	Methyl methacrylate	3.659	80-62-6	53.480
	Σ (Área.%) =			57.373
	Hydrocarbons			
	Toluene	4.552	108-88-3	10.792
	o-Xylene	6.429	95-47-6	6.163
	p-Xylene	6.870	106-42-3	2.092
	Mesitylene	8.300	108-67-8	2.853
	1,2,3 trimethylbenzene	8.798	526-73-8	3.196
	Naphthalene	12.357	91-20-3	2.438
	Σ (Area.%) =			27.533
	NIC			
	Σ (Area.%) =			15.094
60	Esters of Acrylic Acids			
	Methyl isobutyrate	3.299	547-63-7	3.153
	Methyl methacrylate	3.648	80-62-6	36.998
	Σ (Área.%) =			40.151
	Hydrocarbons			
	Toluene	4.546	108-88-3	10.775
	o-Xylene	6.423	95-47-6	7.400
	p-Xylene	6.864	106-42-3	2.595
	Mesitylene	8.294	108-67-8	3.592
	1,2,3 trimethylbenzene	8.780	526-73-8	4.611
	Naphthalene	12.282	91-20-3	1.926
	Σ (Area.%) =			30.899
	Esters of Benzoic Acids			
	Methyl benzoate	10.714	93-58-3	2.406

	Σ (Area.%) =	2.406
	NIC	
	Σ (Area.%) =	26,544

NIC = Non identified compounds.

Table S4. Class of compounds, sum of peak areas, chemistry registry numbers (CAS) and retention times of molecules identified by gas chromatography–mass spectrometry (GC-MS) in the liquid phase for depolymerization of PMMA based dental resin fragments/residues at 450 °C, atmospheric pressure and reaction times of 40, 50, 60, 70, 80, 90 and 100 min, on the pilot scale.

[min]	Class of chemical compounds	RT [min]	CAS	Σ_i (Area.%)
40	Esters of Acrylic Acids			
	Methyl methacrylate Σ (Área.%) =	3.670	80-62-6	100.000 100.000
50	Esters of Acrylic Acids			
	Methyl methacrylate Σ (Área.%) =	3.669	80-62-6	100.000 100.000
60	Esters of Acrylic Acids			
	Methyl methacrylate	3.672	80-62-6	98.194
	Methyl isobutyrate	3.321	547-63-7	1.806
	Σ (Área.%) =			100.000
70	Esters of Acrylic Acids			
	Methyl methacrylate Σ (Área.%) =	3.668	80-62-6	95.553 95.553
	Esters of Methacrylic/Carboxylic Acids			
	Ethylene glycol dimethacrylate	14.003	97-90-5	2.643
	Hexanedioic acid, 2-methyl-5-methylene-, dimethyl ester Σ (Área.%) =	14.228	4513-62-6	1.804 4.447
80	Esters of Acrylic Acids			
	Methyl methacrylate Σ (Área.%) =	3.667	80-62-6	95.814 95.814
	Esters of Methacrylic/Carboxylic Acids			
	Ethylene glycol dimethacrylate	14.004	97-90-5	1.999
	Hexanedioic acid, 2-methyl-5-methylene-, dimethyl ester Σ (Área.%) =	14.228	4513-62-6	2.187 4.186
90	Esters of Acrylic Acids			
	Methyl isobutyrate	3.299	547-63-7	3.893
	Methyl methacrylate Σ (Área.%) =	3.659	80-62-6	53.480 57.373
	Hydrocarbons			
	Toluene	4.552	108-88-3	10.792
	o-Xylene	6.429	95-47-6	6.163
	p-Xylene	6.870	106-42-3	2.092
	Mesitylene	8.300	108-67-8	2.853
	1,2,3 trimethylbenzene	8.798	526-73-8	3.196
	Naphthalene	12.357	91-20-3	2.438
	Σ (Area.%) =			27.533
	NIC			
	Σ (Area.%) =			15.094

100	Esters of Acrylic Acids			
	Methyl isobutyrate	3.299	547-63-7	3.153
	Methyl methacrylate	3.648	80-62-6	36.998
	Σ (Area.%) =			40.151
	Hydrocarbons			
	Toluene	4.546	108-88-3	10.775
	o-Xylene	6.423	95-47-6	7.400
	p-Xylene	6.864	106-42-3	2.595
	Mesitylene	8.294	108-67-8	3.592
	1,2,3 trimethylbenzene	8.780	526-73-8	4.611
	Naphthalene	12.282	91-20-3	1.926
	Σ (Area.%) =			30.899
	Esters of Benzoic Acids			
	Methyl benzoate	10.714	93-58-3	2.406
	Σ (Area.%) =			2.406
	NIC			
	Σ (Area.%) =			26,544

NIC = Non identified compounds.

Table S5. Process conditions and programming of Chromatographic tests.

Injection				
T(°C)	Flow (mL/min)	Split	Heating rate (°C/min)	Volume (μL)
250	6.0	1:50	10	1.0
Oven				
T (°C)	Heating rate (°C/min)	Time (min)		
60	-	1		
200	5	2		
230	20	10		
280	10	39		
Detector				
T (°C)	Carrier Gas	Flow (mL/min)	Quadrupole T (°C)	
	He	30	150	