

**Table S5.** Results of the GC-MS analysis of the gas phase extracted during shock destruction of cordierite № 5 (Muzkol complex, Pamir, Tajikistan, species diversity of 172 components).

Formula	Name	<sup>1</sup> CAS/NIST	<sup>2</sup> MW	Cordierite №5	
				<sup>3</sup> RT, min	<sup>4</sup> A, %
Aliphatic hydrocarbons					
Paraffins					
CH <sub>4</sub>	Methane	74-82-8	32	1.90	0.004
C <sub>2</sub> H <sub>6</sub>	Ethane	74-84-0	30	2.86	0.014
C <sub>3</sub> H <sub>8</sub>	n-Propane	74-98-6	44	4.93	0.006
C <sub>4</sub> H <sub>10</sub>	Isobutane	75-28-5	58	6.71	0.017
C <sub>4</sub> H <sub>10</sub>	n-Butane	106-97-8	58	7.04	0.026
C <sub>5</sub> H <sub>12</sub>	n-Pentane	109-66-0	72	9.48	0.012
C <sub>6</sub> H <sub>14</sub>	n-Hexane	110-54-3	86	13.09	0.055
C <sub>7</sub> H <sub>16</sub>	n-Heptane	142-82-5	100	17.55	0.022
C <sub>8</sub> H <sub>16</sub>	3-Methyleneheptane	1632-16-2	112	21.08	0.142
C <sub>8</sub> H <sub>18</sub>	n-Octane	111-65-9	114	21.80	0.037
C <sub>9</sub> H <sub>20</sub>	n-Nonane	111-84-2	128	25.76	0.032
C <sub>10</sub> H <sub>22</sub>	n-Decane	124-18-5	142	29.41	0.028
C <sub>11</sub> H <sub>24</sub>	n-Undecane	1120-21-4	156	32.61	0.055
C <sub>12</sub> H <sub>26</sub>	n-Dodecane	112-40-3	170	36.45	0.027
C <sub>13</sub> H <sub>28</sub>	n-Tridecane	629-50-5	184	41.78	0.030
C <sub>14</sub> H <sub>30</sub>	n-Tetradecane	629-59-4	198	50.17	0.033
C <sub>15</sub> H <sub>32</sub>	5-Methyltetradecane	25117-32-2	212	54.04	0.050
C <sub>15</sub> H <sub>32</sub>	n-Pentadecane	629-62-9	212	63.56	0.052
C <sub>16</sub> H <sub>34</sub>	n-Hexadecane	544-76-3	226	68.84	0.231
C <sub>17</sub> H <sub>36</sub>	7-Methylhexadecane	26730-20-1	240	84.98	0.071
C <sub>17</sub> H <sub>36</sub>	n-Heptadecane	629-78-7	240	126.61	0.151
Olefins					
C <sub>2</sub> H <sub>2</sub>	Ethylene	74-85-1	28	2.53	0.007
C <sub>3</sub> H <sub>6</sub>	1-Propene	115-07-1	42	4.48	0.017
C <sub>4</sub> H <sub>8</sub>	2-Methyl-1-propene	115-11-7	56	6.46	0.121
C <sub>5</sub> H <sub>8</sub>	1,4-Pentadiene	591-93-5	68	8.71	0.001
C <sub>5</sub> H <sub>10</sub>	1-Pentene	109-67-1	70	9.11	0.030
C <sub>5</sub> H <sub>8</sub>	2-Methyl-1,3-butadiene	78-79-5	68	9.33	0.208
C <sub>5</sub> H <sub>8</sub>	3-Methyl-1,2-butadiene	598-25-4	68	9.56	0.008
C <sub>5</sub> H <sub>8</sub>	1,3-Pentadiene	504-60-9	68	9.86	0.003
C <sub>5</sub> H <sub>8</sub>	(Z)-1,3-Pentadiene	1574-41-0	68	9.96	0.002
C <sub>6</sub> H <sub>12</sub>	1-Hexene	592-41-6	84	12.84	0.021
C <sub>6</sub> H <sub>10</sub>	4-Methyl-1,3-pentadiene	926-56-7	82	13.29	0.011
C <sub>6</sub> H <sub>10</sub>	(Z)-3-Methyl-1,3-pentadiene	2787-45-3	82	13.92	0.008
C <sub>6</sub> H <sub>10</sub>	(E,E)-2,4-Hexadiene	5194-51-4	82	14.19	0.005
C <sub>6</sub> H <sub>10</sub>	1-Hexyne	693-02-7	82	15.22	0.009
C <sub>7</sub> H <sub>14</sub>	1-Heptene	592-76-7	98	17.12	0.012
C <sub>8</sub> H <sub>16</sub>	(E)-3-Octene	14919-01-8	112	21.23	0.094
C <sub>8</sub> H <sub>16</sub>	(Z)-3-Octene	14850-22-7	112	21.48	0.209

C <sub>8</sub> H <sub>16</sub>	1-Octene	111-66-0	112	21.58	0.045
C <sub>9</sub> H <sub>18</sub>	1-Nonene	124-11-8	126	25.23	0.006
C <sub>10</sub> H <sub>20</sub>	1-Decene	872-05-9	140	29.16	0.126
C <sub>11</sub> H <sub>22</sub>	1-Undecene	821-95-4	154	32.56	0.049
C <sub>12</sub> H <sub>24</sub>	1-Dodecene	112-41-4	168	36.19	0.023
C <sub>13</sub> H <sub>26</sub>	1-Tridecene	2437-56-1	182	41.37	0.015
C <sub>14</sub> H <sub>28</sub>	1-Tetradecene	1120-36-1	196	49.46	0.040
C <sub>15</sub> H <sub>30</sub>	1-Pentadecene	13360-61-7	210	62.36	0.047
C <sub>16</sub> H <sub>32</sub>	1-Hexadecene	629-73-2	224	83.61	0.045
C <sub>17</sub> H <sub>34</sub>	1-Heptadecene	6765-39-5	238	120.02	0.115
<b>Cyclic hydrocarbons</b>					
<i>Cycloalkanes (naphthenes) and cycloalkenes</i>					
C <sub>6</sub> H <sub>10</sub>	4-Methylcyclopentene	1759-81-5	82	13.29	0.022
C <sub>8</sub> H <sub>14</sub>	3-Propylcyclopentene	34067-75-9	110	22.07	0.006
<i>Arenes</i>					
C <sub>6</sub> H <sub>6</sub>	Benzene	71-43-2	78	13.57	0.025
C <sub>7</sub> H <sub>8</sub>	Toluene	108-88-3	92	18.25	0.051
C <sub>8</sub> H <sub>10</sub>	Ethylbenzene	100-41-4	106	22.43	0.003
C <sub>8</sub> H <sub>10</sub>	p-Xylene	106-42-3	106	22.70	0.008
C <sub>8</sub> H <sub>8</sub>	Styrene	100-42-5	104	23.26	0.007
C <sub>9</sub> H <sub>12</sub>	Propylbenzene	103-65-1	120	26.36	0.013
C <sub>10</sub> H <sub>14</sub>	o-Cymene	527-84-4	134	29.28	0.025
C <sub>10</sub> H <sub>14</sub>	Butylbenzene	104-51-8	134	30.21	0.013
C <sub>11</sub> H <sub>16</sub>	Pentylbenzene	538-68-1	148	33.69	0.017
C <sub>12</sub> H <sub>18</sub>	Hexylbenzene	1077-16-3	162	37.89	0.014
C <sub>13</sub> H <sub>20</sub>	Heptylbenzene	1078-71-3	176	44.31	0.017
C <sub>14</sub> H <sub>22</sub>	Octylbenzene	2189-60-8	190	54.19	0.038
C <sub>15</sub> H <sub>24</sub>	Nonylbenzene	1081-77-2	204	67.43	0.033
C <sub>10</sub> H <sub>12</sub>	(2-Methylpropenyl)benzene	768-49-0	132	114.35	0.030
<i>Polycyclic aromatic hydrocarbons (PAH)</i>					
C <sub>10</sub> H <sub>8</sub>	Naphthalene	91-20-3	128	33.57	0.005
C <sub>11</sub> H <sub>10</sub>	2-Methylnaphthalene	91-57-6	142	38.10	0.004
C <sub>11</sub> H <sub>10</sub>	1-Methylnaphthalene	90-12-0	142	38.65	0.005
<b>Oxygenated hydrocarbons</b>					
<i>Alcohols, ethers and esters</i>					
CH <sub>4</sub> O	Methyl Alcohol	67-56-1	32	4.31	0.775
C <sub>2</sub> H <sub>6</sub> O	Ethanol	64-17-5	46	6.46	0.107
C <sub>4</sub> H <sub>10</sub> O	1-Butanol	71-36-3	74	13.52	0.104
C <sub>5</sub> H <sub>8</sub> O <sub>2</sub>	Methyl methacrylate	80-62-6	100	15.44	0.027
C <sub>4</sub> H <sub>4</sub> O <sub>2</sub>	γ-Crotonolactone	497-23-4	84	20.55	0.051
C <sub>6</sub> H <sub>6</sub> O	Phenol	108-95-2	94	25.55	0.016
C <sub>5</sub> H <sub>8</sub> O <sub>2</sub>	δ-Valerolactone	542-28-9	100	27.01	0.015
C <sub>6</sub> H <sub>10</sub> O <sub>2</sub>	γ-Caprolactone	695-06-7	114	30.39	0.005
C <sub>5</sub> H <sub>8</sub> Cl <sub>2</sub> O <sub>2</sub>	Butanoic acid, 3,4-dichloro-, methyl ester	819-93-2	170	31.22	0.002

C <sub>9</sub> H <sub>16</sub> O <sub>4</sub>	Acetoxyacetic acid, 3-methylbut-2-yl ester	x	188	33.94	0.049
C <sub>8</sub> H <sub>10</sub> O <sub>2</sub>	2-Phenoxyethanol	122-99-6	138	34.12	0.006
C <sub>8</sub> H <sub>14</sub> O <sub>2</sub>	γ-Octalactone	104-50-7	142	35.64	0.005
C <sub>9</sub> H <sub>16</sub> O <sub>2</sub>	γ-Nonalactone	104-61-0	156	40.95	0.009
C <sub>12</sub> H <sub>22</sub> O <sub>2</sub>	γ-Dodecalactone	2305-05-7	198	83.36	0.009
<i>Aldehydes</i>					
CH <sub>2</sub> O	Formaldehyde	50-00-0	30	5.00	0.293
C <sub>2</sub> H <sub>4</sub> O	Acetaldehyde	75-07-0	44	5.45	0.164
C <sub>3</sub> H <sub>4</sub> O	2-Propenal	107-02-8	56	7.59	0.057
C <sub>3</sub> H <sub>6</sub> O	n-Propanal	123-38-6	58	7.81	0.055
C <sub>3</sub> H <sub>4</sub> O <sub>2</sub>	2-Oxopropanal	78-98-8	72	8.16	0.168
C <sub>4</sub> H <sub>8</sub> O	n-Butanal	123-72-8	72	10.36	0.007
C <sub>5</sub> H <sub>10</sub> O	n-Pentanal	110-62-3	86	15.54	0.026
C <sub>5</sub> H <sub>4</sub> O <sub>2</sub>	2-Furaldehyde	98-01-1	96	18.09	0.003
C <sub>5</sub> H <sub>4</sub> O <sub>2</sub>	3-Furaldehyde	498-60-2	96	18.90	0.199
C <sub>6</sub> H <sub>12</sub> O	n-Hexanal	66-25-1	100	20.03	0.020
C <sub>6</sub> H <sub>6</sub> O <sub>2</sub>	5-Methyl-2-furancarboxaldehyde	620-02-0	110	24.08	0.042
C <sub>7</sub> H <sub>14</sub> O	n-Heptanal	111-71-7	114	24.30	0.021
C <sub>7</sub> H <sub>6</sub> O	Benzaldehyde	100-52-7	106	25.00	0.015
C <sub>8</sub> H <sub>16</sub> O	2-Ethylhexanal	123-05-7	128	26.89	0.084
C <sub>8</sub> H <sub>16</sub> O	n-Octanal	124-13-0	128	28.24	0.033
C <sub>9</sub> H <sub>18</sub> O	n-Nonanal	124-19-6	142	31.84	0.033
C <sub>6</sub> H <sub>6</sub> O <sub>3</sub>	5-Hydroxymethylfurfural	67-47-0	126	32.89	2.260
C <sub>10</sub> H <sub>20</sub> O	n-Decanal	112-31-2	156	35.37	0.037
C <sub>11</sub> H <sub>22</sub> O	n-Undecanal	112-44-7	170	40.35	0.019
C <sub>12</sub> H <sub>24</sub> O	n-Dodecanal	112-54-9	184	47.96	0.030
C <sub>13</sub> H <sub>26</sub> O	n-Tridecanal	10486-19-8	198	60.10	0.052
C <sub>14</sub> H <sub>28</sub> O	n-Tetradecanal	124-25-4	212	79.82	0.052
C <sub>15</sub> H <sub>30</sub> O	n-Pentadecanal	2765-11-9	226	111.49	0.079
<i>Ketones</i>					
C <sub>3</sub> H <sub>6</sub> O	2-Propanone	67-64-1	58	7.94	0.030
C <sub>5</sub> H <sub>10</sub> O	2-Pentanone	107-87-9	86	14.45	0.030
C <sub>5</sub> H <sub>8</sub> O	Cyclopentanone	120-92-3	84	17.79	0.002
C <sub>6</sub> H <sub>12</sub> O	2-Hexanone	591-78-6	100	19.73	0.005
C <sub>5</sub> H <sub>4</sub> O <sub>3</sub>	3-Methyl-2,5-furandione	616-02-4	112	23.28	0.061
C <sub>7</sub> H <sub>14</sub> O	2-Heptanone	110-43-0	114	23.96	0.021
C <sub>8</sub> H <sub>16</sub> O	2-Methyl-4-heptanone	626-33-5	128	26.58	0.004
C <sub>8</sub> H <sub>14</sub> O	6-Methyl-2-heptanone	110-93-0	126	27.28	0.009
C <sub>8</sub> H <sub>16</sub> O	6-Methyl-5-hepten-2-one	111-13-7	128	27.89	0.013
C <sub>9</sub> H <sub>18</sub> O	2-Octanone	821-55-6	142	31.51	0.016
C <sub>10</sub> H <sub>20</sub> O	2-Nonanone	693-54-9	156	34.95	0.026
C <sub>8</sub> H <sub>4</sub> O <sub>3</sub>	2-Decanone	85-44-9	148	36.85	0.051
C <sub>11</sub> H <sub>22</sub> O	Phthalic anhydride	112-12-9	170	39.68	0.027

C <sub>12</sub> H <sub>24</sub> O	2-Undecanone	6175-49-1	184	46.88	0.018
C <sub>13</sub> H <sub>26</sub> O	2-Dodecanone	29366-35-6	198	55.47	0.083
C <sub>13</sub> H <sub>26</sub> O	2-Tridecanone	593-08-8	198	58.37	0.042
C <sub>14</sub> H <sub>28</sub> O	2-Tetradecanone	2345-27-9	212	74.49	0.269
C <sub>15</sub> H <sub>30</sub> O	2-Pentadecanone	2345-28-0	226	106.96	0.086
<i>Carboxylic acids</i>					
C <sub>2</sub> H <sub>4</sub> O <sub>2</sub>	Acetic acid	64-19-7	60	12.14	0.219
C <sub>3</sub> H <sub>6</sub> O <sub>2</sub>	n-Propanoic acid	79-09-4	74	16.84	0.013
C <sub>4</sub> H <sub>8</sub> O <sub>2</sub>	n-Butanoic acid	107-92-6	88	20.53	0.041
C <sub>5</sub> H <sub>10</sub> O <sub>2</sub>	3-Methylbutanoic acid	503-74-2	102	23.51	0.006
C <sub>5</sub> H <sub>10</sub> O <sub>2</sub>	n-Pentanoic acid	109-52-4	102	24.55	0.016
C <sub>6</sub> H <sub>12</sub> O <sub>2</sub>	n-Hexanoic acid	142-62-1	116	28.03	0.053
C <sub>7</sub> H <sub>14</sub> O <sub>2</sub>	n-Heptanoic acid	111-14-8	130	31.47	0.018
C <sub>8</sub> H <sub>16</sub> O <sub>2</sub>	n-Octanoic acid	124-07-2	144	34.74	0.036
C <sub>9</sub> H <sub>18</sub> O <sub>2</sub>	n-Nonanoic acid	112-05-0	158	39.25	0.036
C <sub>10</sub> H <sub>20</sub> O <sub>2</sub>	n-Decanoic acid	334-48-5	172	46.14	0.059
C <sub>11</sub> H <sub>22</sub> O <sub>2</sub>	n-Undecanoic acid	112-37-8	186	57.27	0.024
C <sub>11</sub> H <sub>14</sub> O <sub>3</sub>	2,4,6-Trimethylmandelic acid	20797-56-2	194	64.91	0.007
C <sub>12</sub> H <sub>24</sub> O <sub>2</sub>	n-Dodecanoic acid	143-07-7	200	74.45	0.092
C <sub>13</sub> H <sub>26</sub> O <sub>2</sub>	n-Tridecanoic acid	638-53-9	214	101.41	0.053
<b>Heterocyclic compounds</b>					
<i>Dioxanes</i>					
C <sub>4</sub> H <sub>8</sub> O <sub>2</sub>	1,4-Dioxane	123-91-1	88	14.42	0.001
C <sub>4</sub> H <sub>8</sub> O <sub>2</sub>	1,3-Dioxane	505-22-6	88	17.69	0.005
<i>Furans</i>					
C <sub>5</sub> H <sub>6</sub> O	2-Methylfuran	534-22-5	82	11.16	0.008
C <sub>5</sub> H <sub>6</sub> O	3-Methylfuran	930-27-8	82	11.44	0.001
C <sub>6</sub> H <sub>8</sub> O	2-Ethylfuran	3208-16-0	96	17.35	0.005
C <sub>7</sub> H <sub>10</sub> O	2-Propylfuran	4229-91-8	110	18.70	0.008
C <sub>5</sub> H <sub>6</sub> O <sub>2</sub>	2-Methoxyfuran	25414-22-6	98	19.15	0.058
C <sub>8</sub> H <sub>12</sub> O	2-Butylfuran	4466-24-4	124	23.68	0.004
C <sub>9</sub> H <sub>14</sub> O	2-Pentylfuran	3777-69-3	138	27.61	0.006
C <sub>10</sub> H <sub>16</sub> O	2-Hexylfuran	3777-70-6	152	31.26	0.001
C <sub>11</sub> H <sub>18</sub> O	2-Heptylfuran	3777-71-7	166	34.72	0.002
C <sub>12</sub> H <sub>20</sub> O	2-Octylfuran	4179-38-8	180	39.30	0.005
C <sub>13</sub> H <sub>22</sub> O	2-Nonylfuran	x	194	46.29	0.006
C <sub>15</sub> H <sub>26</sub> O	2-Undecylfuran	4082-56-8	222	67.01	0.003
<b>Sulfonated compounds</b>					
H <sub>2</sub> S	Hydrogen sulfide	7783-06-4	34	3.33	0.002
COS	Carbonyl sulfide	463-58-1	60	3.90	0.014
O <sub>2</sub> S	Sulfur dioxide	7446-09-5	64	4.80	0.255
CH <sub>4</sub> S	Methanethiol	74-93-1	48	5.41	0.022
CS <sub>2</sub>	Carbon disulfide	75-15-0	76	8.31	0.012
C <sub>2</sub> H <sub>6</sub> S <sub>2</sub>	Dimethyl disulfide	624-92-0	94	16.35	0.001

C <sub>7</sub> H <sub>10</sub> S	2-Propylthiophene	1551-27-5	126	26.48	0.004
C <sub>9</sub> H <sub>14</sub> S	2-Pentylthiophene	4861-58-9	154	32.89	0.094
C <sub>10</sub> H <sub>16</sub> S	2-Hexylthiophene	18794-77-9	168	36.12	0.004
<b>Nitrogenated compounds</b>					
N <sub>2</sub>	Nitrogen	7727-37-9	28	1.92	0.179
C <sub>5</sub> H <sub>9</sub> N	1-Isocyanobutane	2769-64-4	83	6.83	0.028
CH <sub>3</sub> NO	Formamide	75-12-7	45	8.43	0.006
C <sub>2</sub> H <sub>5</sub> NO	Acetamide	60-35-5	59	15.32	0.026
C <sub>5</sub> H <sub>5</sub> N	Pyridine	110-86-1	79	15.94	0.006
C <sub>7</sub> H <sub>15</sub> N	1,2-Dimethylpiperidine	671-36-3	113	24.05	0.008
C <sub>8</sub> H <sub>19</sub> N	Propylneopentylamine	131229-65-7	129	26.89	0.030
C <sub>6</sub> H <sub>8</sub> N <sub>2</sub> O	2-Methoxy-6-methylpyrazine	2882-21-5	124	28.18	0.111
C <sub>4</sub> H <sub>5</sub> NO <sub>2</sub>	Succinimide	123-56-8	99	28.96	0.137
C <sub>5</sub> H <sub>9</sub> NO	1-Methyl-2-pyrrolidone	872-50-4	99	30.87	0.002
C <sub>14</sub> H <sub>29</sub> NO	3,5,5-trimethyl-N-3-methylbutyl-hexanamide	(419847)	227	95.74	0.046
<b>Inorganic compounds</b>					
<i>Oxides</i>					
CO <sub>2</sub>	Carbon dioxide	124-38-9	44	2.18	26.306
H <sub>2</sub> O	Water	7732-18-5	18	3.41	63.492

Note: <sup>1</sup>CAS/(NIST) – unique numerical identifier of chemical compounds included in the register Chemical Abstracts Service (<https://www.cas.org>) or NIST number (a unique number given to each spectrum in the NIST archive); <sup>2</sup>MW – nominal mass; <sup>3</sup>RT – retention time; <sup>4</sup>A – normalized area (the area ratio of the individual gas mixture components to the sum of the areas of all the components in the chromatogram).