

# The Mechanical Properties of Geopolymers from Different Raw Materials and the Effect of Recycled Gypsum

Henna Korhonen <sup>1</sup>, Juha Timonen <sup>2</sup>, Sari Suvanto <sup>1</sup>, Pipsa Hirva <sup>1,\*</sup>, Kirsi Mononen <sup>2</sup> and Sirpa Jääskeläinen <sup>1</sup>

<sup>1</sup> Department of Chemistry, University of Eastern Finland, P.O. Box 111, FI-80101 Joensuu, Finland; henna.korhonen@uef.fi (H.K.); sari.suvanto@uef.fi (S.S.); sirpa.jaaskelainen@uef.fi (S.J.)

<sup>2</sup> Apila Group Oy Ab, Hietalantie 7A, FI-80710 Lehmo, Finland; juha.timonen@apilagroup.fi (J.T.); kirsi.mononen@apilagroup.fi (K.M.)

\* Correspondence: pipsa.hirva@uef.fi

## Supporting material

Figure S1. XRD of specimens 5 and 6.

Figure S2. XRD of specimens 7 and 8.

Figure S3. XRD of specimens 9 and 10.

Figure S4. XRD of specimens 11 and 12.

Figure S5. Prepared specimens 1-13

Figure S6. SEM-images of species 1-12.

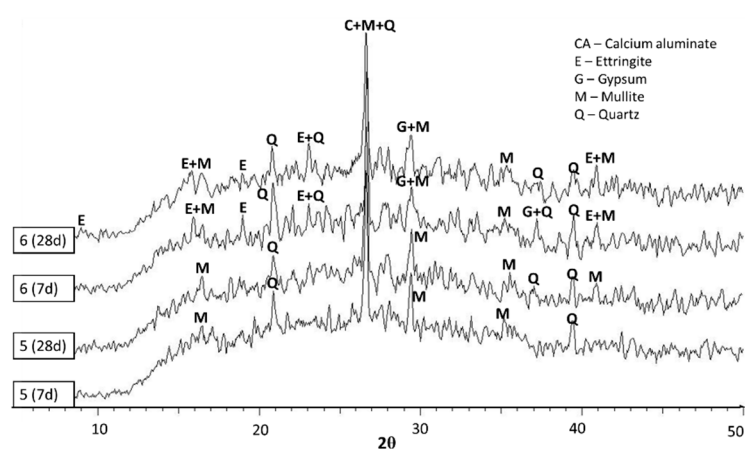
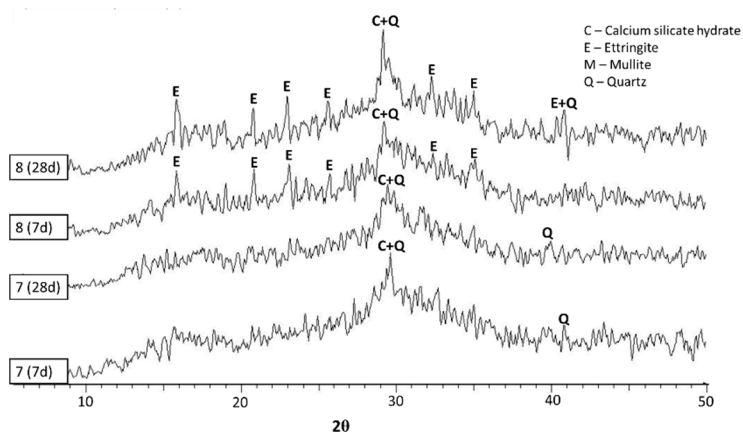
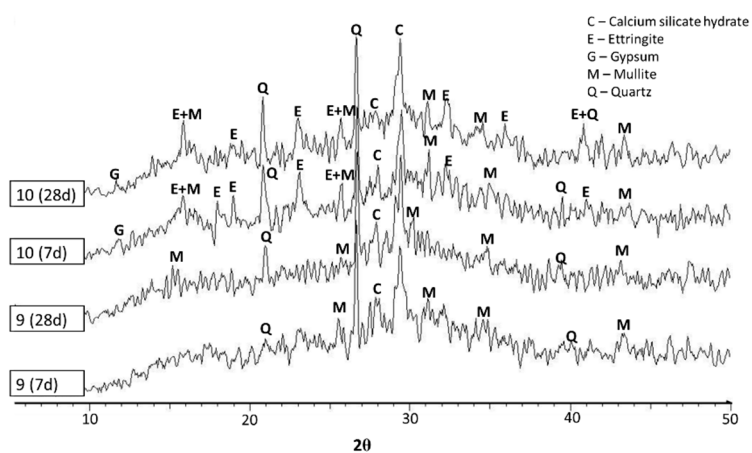


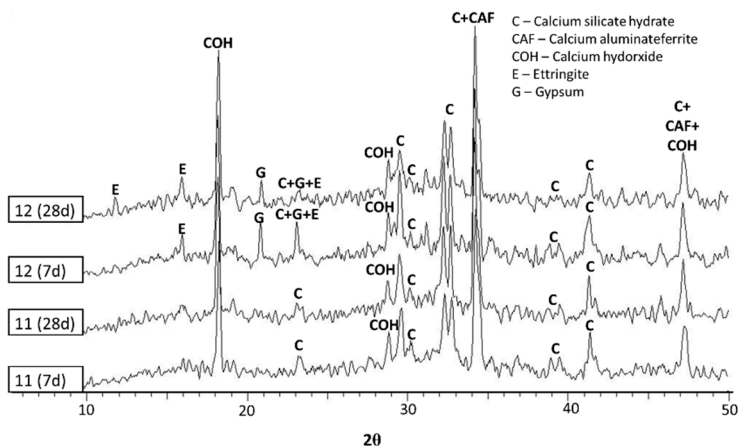
Figure S1. XRD of specimens 5 and 6.



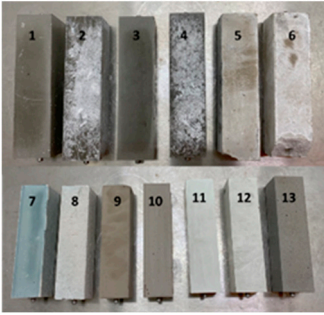
**Figure S2.** XRD of specimens 7 and 8.



**Figure S3.** XRD of specimens 9 and 10.



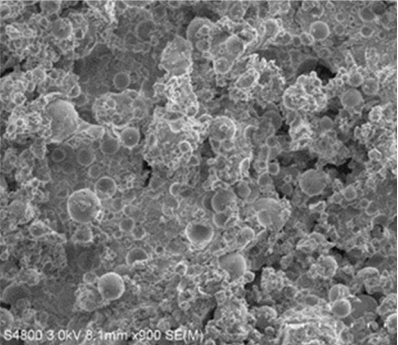
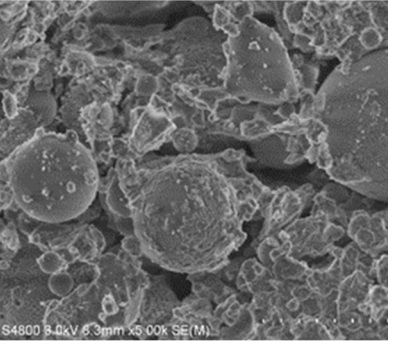
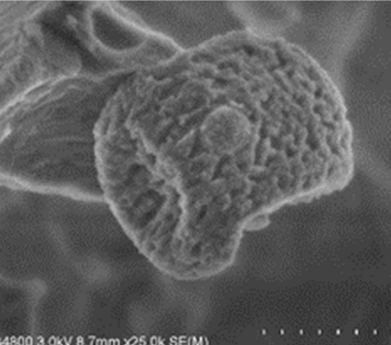
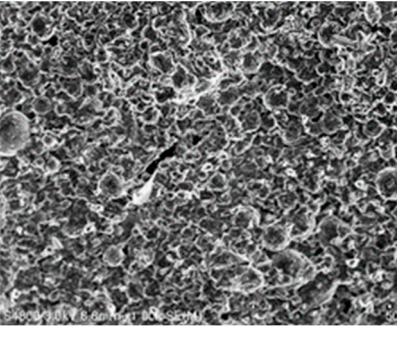
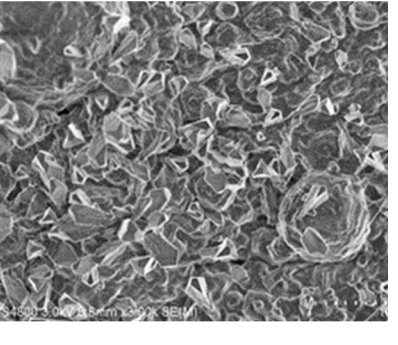
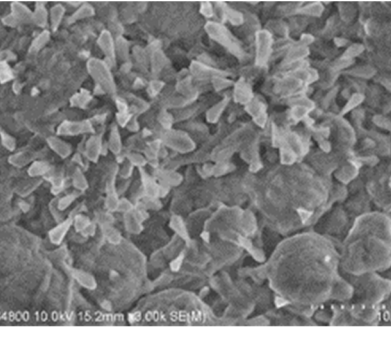
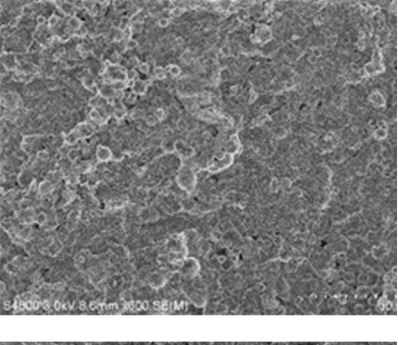
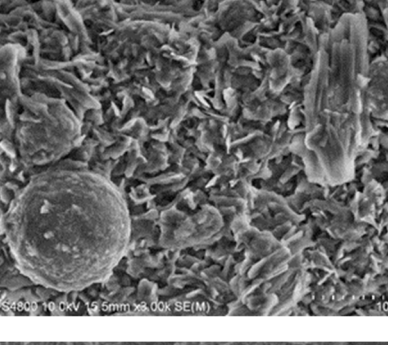
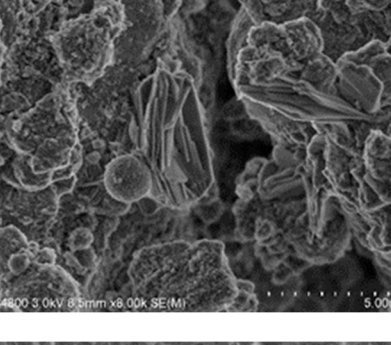
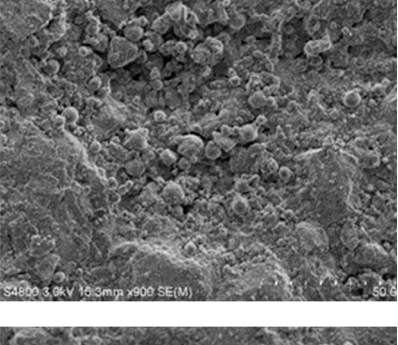
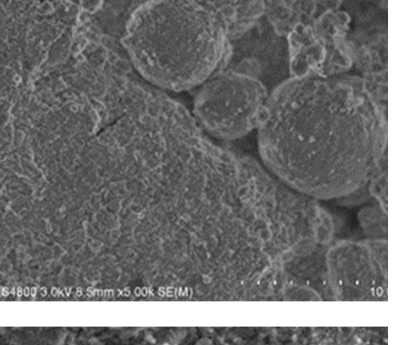
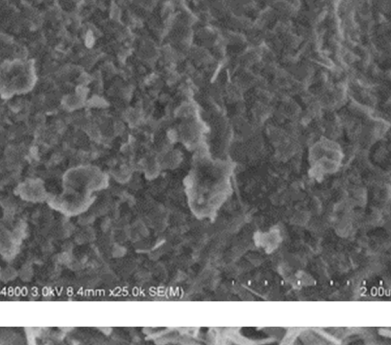
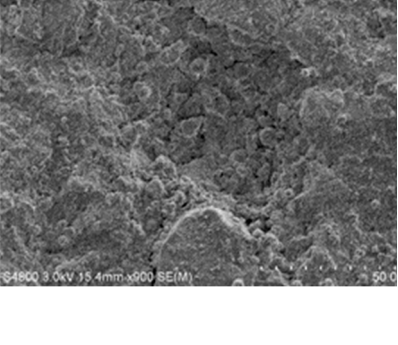
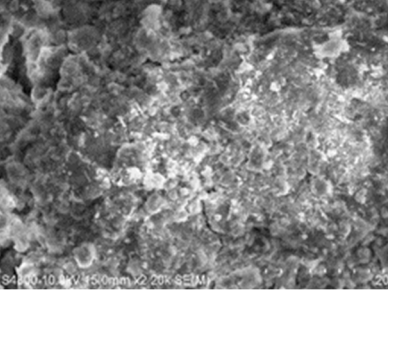
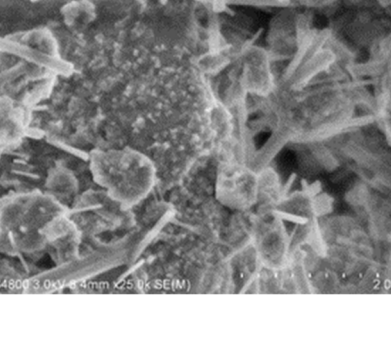
**Figure S4.** XRD of specimens 11 and 12.



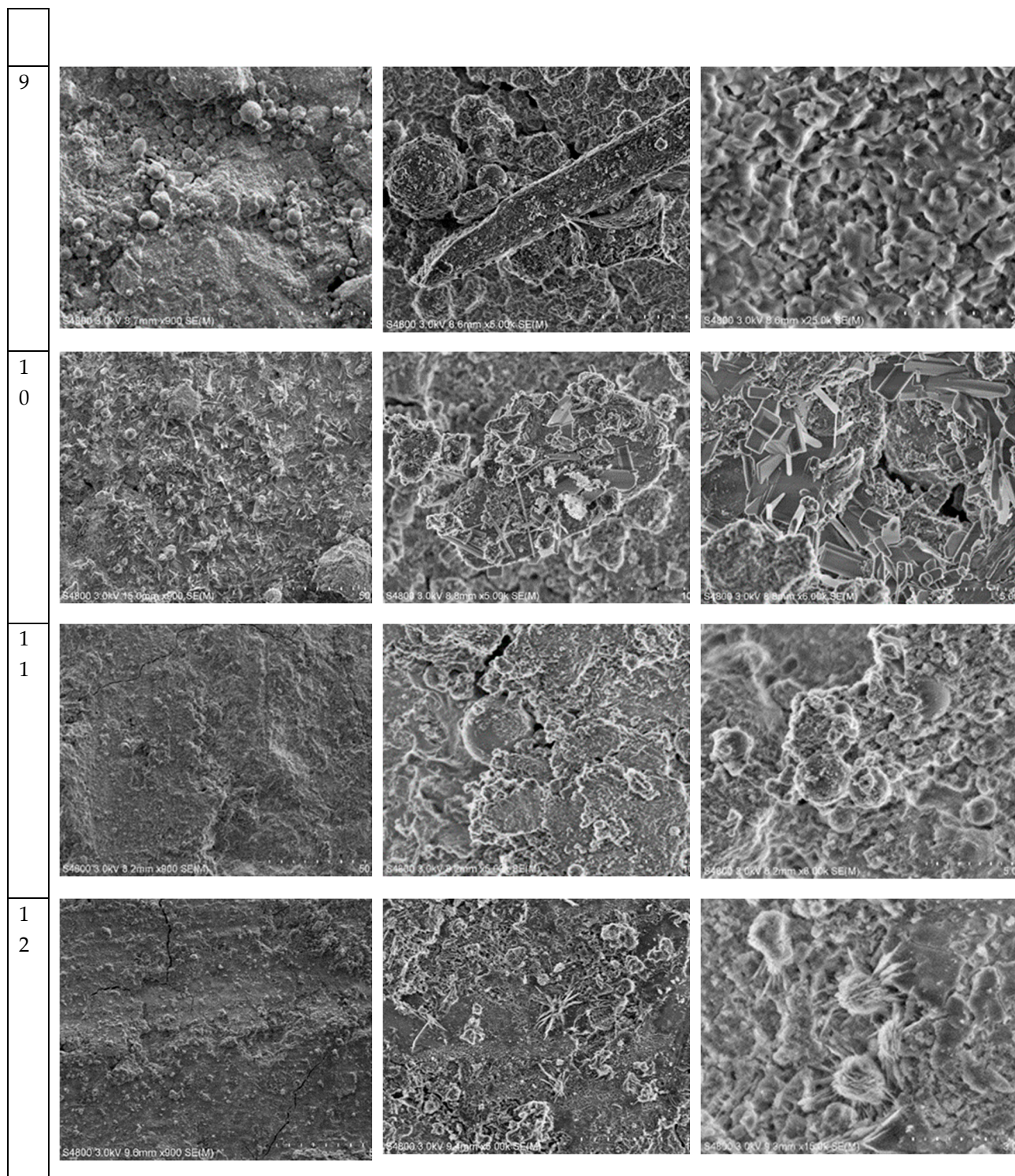
**Figure S5.** Prepared specimens 1-13.

s p	50 $\mu\text{m}$	10/20 $\mu\text{m}$	1/2/5 $\mu\text{m}$
1			
2			
3			



4	 <p>S4800 3.0kV 8.1mm x900 SE(M)</p>	 <p>S4800 3.0kV 6.3mm x5,00k SE(M)</p>	 <p>S4800 3.0kV 6.7mm x25.0k SE(M)</p>
5	 <p>S4800 3.0kV 7.6mm x900 SE(M)</p>	 <p>S4800 3.0kV 5.5mm x5,00k SE(M)</p>	 <p>S4800 10.0kV 15.2mm x5,00k SE(M)</p>
6	 <p>S4800 3.0kV 8.6mm x900 SE(M)</p>	 <p>S4800 10.0kV 15.5mm x5,00k SE(M)</p>	 <p>S4800 3.0kV 6.5mm x8,00k SE(M)</p>
7	 <p>S4800 3.0kV 10.3mm x900 SE(M)</p>	 <p>S4800 3.0kV 5.5mm x5,00k SE(M)</p>	 <p>S4800 3.0kV 8.4mm x25.0k SE(M)</p>
8	 <p>S4800 3.0kV 15.4mm x900 SE(M)</p>	 <p>S4800 10.0kV 15.0mm x2,20k SE(M)</p>	 <p>S4800 3.0kV 8.4mm x25.0k SE(M)</p>





**Figure S6.** SEM-images of species 1-12.