

Institute of Rock Structure and Mechanics, v.v.i. AS C.R., Prague

Workshop „Review of Geopolymers”

17<sup>th</sup> of October 2011 – 21<sup>st</sup> of October 2011

Workshop language: English

Informal meeting organized by the Laboratory of Chemistry of Geopolymer and based on interest of international collaborators from Slovenia, Italy, Germany and Algeria. The transfer and share experience on geopolymer technique and technology means also wide and open discussion among the collaborating parties.

The workshop will recapitulate qualities of materials used for geopolymer technology and will focus on analytical methods confirming formation of Al-O-Si netting and its precursors.

Specification of the most outstanding qualities and possibilities of changing the materials character by addition of different materials, including industrial waste or crushed stones and sand, will take important part of workshop time.

Examples of different applications on semi-industrial level will be presented by the cooperated Czech Development Agency.

Organization notes:

Every participant is covering its own expenses (travel, hotel, city-transfer, etc.). The IRSM could arrange lunch at local cantina (local food: soup + main dish, approx. 3-4 Euros).

Transportation in city:

Location of IRSM installations: V Holesovickach 41, Prague 8 – by bus No.102 and 186 from Metro station “Holesovicke nadrazi” to station on request: “Vychovatelna”. The opposite blue-gray buildings (reached by underground passage) are the location of the institute. Cost of single ticket is 32, - Cz.Cr. (1, 28 Euro) – valid 90minutes with possibilities of changes between bus, metro and tramway.

In case of emergency: Tomas mobile phone: 00420 731 165 041

Monday: 10:00 the first meeting of the participants (welcome speech - the director of the Institute)

**17.10.** 10:30 individual presentations of participants and identification of the focus of interests.

Discussion on topics - specification of common and specialized themes.

12.30 Lunch

13:15 Materials

Discussion

13:45 Analytical methods and their combinations

Discussion

14:15 Example of calculations of material active substances  
Discussion  
15:00 Calculations of alkali and water content

Tuesday: 9:30 Laboratory experiments with different clay and clayed materials  
**18.10.** (Industrially prepared one, laboratory prepared and natural).

12:30 Lunch

13:15 Geopolymer matrix and geopolymer composites  
Inert additives – examples,  
active additives- examples.  
Discussion

14:00 Laboratory experiments with different type of additives

Wednesday: 9:30 comparing the results of day after experiments and discussion on treatment  
**19.10.** (Oven temperature, temperature and influence on quality).

11:00 The FTIR analyses of prepared samples. Explanation of method and identifications of vibrations which correspond to the formation of geopolymers.

12:30 Lunch

13:15 XRF analyses – sample preparation, analyses and estimation of materials by simplified calculations, LOI identification.

15:00 The use of MAS-NMR ( $^{27}\text{Al}$  MAS-NMR in geopolymer technology)  
(Penta and tetra coordination of alumina ions)

Thursday: 9:30 Presentation of Czech Development Agency, 5 years experience with  
**20.10.** geopolymer technology on semi-industrial level (Patrik)  
Discussion

10:30 The Economic aspects of geopolymer technology. (Ing. Ertl).  
Discussion

11:30 Possible cooperation with CzDA

12:30 Lunch

13:15 Definitions, standardization, and norms. (Doc.Straka)  
Discussion

14:30 The formulation of possible cooperation programs (scientific or applications)

16:00 Small afternoon party

Friday: 9:30 Geopolymer link to the cultural heritage (Vitruvius, mortars, agglomerated  
**21.10.** stones, etc., 19.Century experience of Vicat etc.)  
Discussion

11:30 Recapitulation of week activities – evaluation of materials, methods and confirmations of geopolymer netting.

12:30 Lunch

## Individual departure of participants