MS15-P8 **Progress in the Calcium-Palladium-Germanium system**. Isa Doverbratt, Siméon Ponou, Sven Lidin, *Centre for Analysis and Synthesis, Lund University, P.O. Box 124, 22100 Lund, Sweden*
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The Ca-Pd-Ge system has been unexplored until recently. It is a remarkable system with a large variety of compounds of various structures and composition. The syntheses are high temperature reactions with slow cooling, which yield multiphase products, in which some are stable under ambient conditions whereas others are labile. Apart from a number of phases with known type structures Ca_2Pd_3Ge (Mg_2Ni_3Si), Ca_2PdGe_3 (Ce_2CoSi_3), $CaPd_5Ge_3$ ($CuHf_5Sn_3$), $Ca_4Pd_4Ge_3$ ($Nd_4Rh_4Ge_3$), $Ca_5Pd_2Ge_4$ (Y_5Co_5Ga) ect. we have some that are new Ca_2Pd_2Ge (*Fdd2*), $Ca_5Pd_6Ge_6$ (*Im*$\bar{3}$*m*) etc.

Keywords: Zintl phase, coloring, x-ray diffraction

MS15-P9 **Relationship between structure of graphene layers and electrical properties of natural nanostructured carbon compounds** Yevgeny A. Golubev *Institute of Geology of Komi SC of RAS, Syktyvkar, 167982, Russia,*
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Carbon materials have a wide range of physical properties and are characterized by different structures. Distinction of natural glassy carbon (shungite) from synthetic carbon materials is primarily the presence of various impurities (ex. S, Si, Cl, N, Fe) and a wider variation of structural parameters [1]. Scientific and practical interest to shungite increased after the finding of fullerenes in them and nanoscale fullerene-like structures. It is of note, shungites from different deposits differs in morphology and dispersion of nanosized structures. There are various assumptions about the effect of the possible mechanisms of the influence of nanoscale structures on electrophysical properties of shungite [2, 3].

This has stimulated to study of local conducting properties of shungite carbon by scanning probe microscopy methods to display the current spreading resistance. In this work are present experimental results on the local conductivity of shungite surface. We used the samples of high-carbon shungite from Karelia (carbon content of not less than 95%). Shungite samples have been selected from occurrences, which differ in the genesis of shungite substance and PT-conditions of their formation. These factors have determined to differences molecular and supermolecular structure of samples, elemental composition and distribution of impurities.

Comparison of the topographic images, spreading resistance and the elemental mapping possible to separate the contributions of structural and chemical component in the conductive properties of the samples. Current-voltage characteristics show that the electrical conductivity of shungites both metallic type without the threshold voltage, and there is a significant value of the threshold voltage (semiconductor type of conductivity).

Results of the X-ray and electron diffraction, x-ray spectroscopy and spectroscopic analyzes to study of influence of molecular structure on the electrical conductive properties were analyzed. Results of Raman spectroscopy were most informative. They showed that a key factor controlling conductivity of shungites is distribution of impurity elements at the boundaries of packets of the graphene layers.

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Keywords: natural glassy carbon; nanostructure; electrical properties of solids