



SUMMARY OF PANEL DISCUSSION HELD DURING FIRST OMA MEETING ON 13 NOVEMBER 2012

(Summary by T. Laitinen and S. Seppo)

This is a summary of the panel discussion held in the kick-off seminar of the Programmable Materials Research Programme (OMA) on 13 November 2012.

The purpose of the setting up of the panel was to bring up ideas and future visions from among the panellists but also from the audience, with relevance to OMA. A specific goal set for the panel was to bring up proposals for a theme or themes to be discussed in the future.

The panellists were:

Professor Jindrich Kopecek, University of Utah

Technology Manager Heidi Fagerholm, Kemira

Dr Leo Kärkkäinen, Nokia

Professor Minna Kellomäki, Tampere University of Technology

Professor Kari Rissanen, University of Jyväskylä.

This discussion was conducted through posing the following questions/themes: a) How to define measures for good research, b) Should research that does not have an application industry in Finland be funded, c) Out-of-the-box thinking, d) What does the 'programmable materials' mean, and does the name matter? e) What could programmable materials enable? f) What would be the subjects for discussion at the next meeting(s)?

How to define measures for good research? Good research finds the essential things among large amount of data (data mining), provides citations (it should not be, for example, the purpose of getting results published in *Nature* or *Science*, if some other journals would be a better arena) and new hypotheses, is something that your colleagues appreciate, solves important problems, provides research results that are taken further by someone else, is something that not only creates knowledge but also combines it.

Should research that does not have an application industry in Finland be funded? Some sort of focusing is necessary. We should not jump into a field where a lot of others are already doing research. Research should not be too directed, and more emphasis should be put on quality. There should be completely free basic funding for principal investigators but there should also be targeted funding for basic research.



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Out-of-the-box thinking: Science is very hectic today, if we were slower we would see more possibilities around us. Interdisciplinary collaborations are important. It takes a lot of time to achieve a level where people “speak the same language” in an interdisciplinary collaboration, that is to say, the collaborative research should be sufficiently long term. People tend to stay on their own fields (of comfort).

What does the ‘programmable materials’ mean, and does the name matter? One could also use the term ‘functional materials’. The name itself is not important. Programmable can be based on time, location, etc. Programmable material is simply a material with a plan.

What could programmable materials enable? Self-assembling materials are a future possibility. For example, devices could grow by themselves. Sky is the limit. What does the research on programmable materials enable could be another question. By incorporating two or more functions in a material can allow developing solutions to the level of proof of concept, and this can be valuable. New biomaterials and drugs can be developed. Targeted drugs can be developed if there are fast diagnostics methods.

What would be the subjects for discussion at the next meeting(s)? What would be the best path for a young scientist to make an independent scientific career? It is interesting to see the results from the project. To attract young researchers, it would be good to concentrate on how to present your results orally and in writing in a good way. There was a comment from the audience, that it would be important to discuss how the programme can solve the actual problems, such as energy issues, climate issues. Another comment from the audience was that the panel could also be multidisciplinary at the next meeting.