NOMAD

NOVEL MATERIALS DISCOVERY

NOMAD Laboratory Centre of Excellence

Industry Interview - Institute for Concentration Photovoltaics Systems (ISFOC)

ISFOC

ISFOC is a Research and Development Center focused on Concentration Photovoltaic systems and energy efficiency. We consider NOMAD a very interesting project in the high-performance of solar cells and in the development of other materials related to the solar industry, and even very convenient and appropriate for our interests because it will make it possible to develop new materials and enhance those already existing. The project is clearly in line with our existing research efforts. ISFOC is very interested in those materials which enable an efficiency increase of the transmittance of lenses, thermal dilatation of materials, efficiency of mirrors reflectance and photovoltaic effect of materials.

ISFOC is a small R&D Center and it is not easy for us to devote time, effort and money in researching and searching for new materials. The Encyclopedia developed by NOMAD will make it possible to suggest unknown materials with desired properties for special applications (such as powerful batteries), or to bring to light previously unknown properties of already known materials, (e.g. graphene).

We are aware that there are still a lot of materials to be discovered in the near future in the solar industry and many materials with hidden and superior properties exist but still have to be identified for use in this sector (solar and energy efficiency, plasticity, conductivity, energy storage and transformation, safety, mobility, etc.). NOMAD will enable our scientists and engineers to decide which materials are useful for specific applications or which new materials should be the focus of future studies, in other words, it will offer our engineers information which could be relevant for them.

The NOMAD Encyclopedia will provide us with a comprehensive report about all the information related to an enquiry or search (mechanical and thermal properties, materials and electronic structure, transport properties, etc.) which will include statistics, methodology and protocol, and relative publications. NOMAD should bring to the market tools that could drive the selection of the most promising materials for a given application. For example, one material may have been investigated in a certain context, but may be also useful for another application. Thus, if all the data were available, much of the same work could be avoided.

Notwhistanding, Intellectual Property issues must be carefully considered and it should be known what is patented and by who, and properties search tools should be designed to be user-friendly. Success stories should also be revealed and published.

Industry, Academia and Research Centers have been constantly producing materials data and potential properties for many years. The results are stored on PCs, workstations, or local computers. Most of these data are not used or often even erased and eliminated, though the information content is significant. We should change our scientific culture, and create open access to data which means that that data can be used by anyone, not just by the experts who develop or run advanced codes. Very probably, we will be surprised what people will do with data, probably using tools that the present computational materials community does not even know about. More importantly, publishing results and making data available should be seen as a duty considering that some of the investigations are carried out in Research Centers and Universities endorsed by states and in consequence funded by the taxpayers.

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