



## Newsletter 2, December 2005

Dear reader,

It is some time ago that we sent the first issue of the CrystalClear Newsletter. From now on we plan to keep you up-to-date about progress in our project and other relevant developments on a more regular basis, namely three to four times per year. After each meeting of the Executive Board we will report selected scientific and technical highlights and address organizational matters that may be of interest to you. If you have comments or suggestions, also for the contents of upcoming issues, please send them to [pmo@ipcrystalclear.info](mailto:pmo@ipcrystalclear.info).

### Research results

In Sub-Project 1 (SP1), which is dedicated to the subject of feedstock, the first tests of new silicon material have been carried out by the University of Konstanz, Scancell and ECN. Clearly, new (solar grade) silicon is needed badly to solve the supply problems the PV industry is facing recently. The first silicon samples were kindly supplied by Wacker and have been produced in a fluidized bed reactor. **Read more ...**

In SP2, which is dedicated to ingot growth and wafering, several very large ingots have been grown successfully at Deutsche Solar and Photowatt. Their weight is 400-450 kg and the main advantages of growing such huge blocks are that the costs of consumables as well as the silicon losses are reduced. **Read more ...**

In SP3 (thin films) IMEC has demonstrated that large-area (8x8 cm<sup>2</sup>) very thin (10-20 μm) free-standing silicon films can be made by a so-called lift-off process followed by epitaxial growth from the gas phase. In lift-off processing, a thin layer of high-quality single-crystal silicon is separated from the top of a silicon wafer, which can then be reused many times. **Read more ...**

CrystalClear's effort on cells (SP4) has demonstrated that 18% efficiency on large-area multicrystalline silicon, one of our project's underlying main goals, is feasible. The University of Konstanz achieved this remarkable result using a conventional cell design, which has been developed close to perfection. **Read more ...**

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Literally bringing together the results from SP1 to SP4, SP5 is focusing on possible innovations in module manufacturing. The partners in this sub-project have performed a thorough evaluation of alternative encapsulation materials and methods. Perhaps somewhat disappointing for innovators, the current technology is very hard to beat in cost and performance. **Read more ...**

SP6 on Sustainability has done a great job on fighting old prejudices and misunderstandings about PV. The University of Utrecht together with ECN has analyzed state-of-the-art manufacturing processes and proven once and for all that PV is actually a big net producer of clean electricity. **Read more ...**

SP7, finally, is about Integration. 2005 has been largely dedicated to cost modeling and roadmapping. These are needed to select the most promising and/or pressing research subjects and to create a common understanding about the best overall routes of CrystalClear. **Read more ...**

### Workshops

On 3 November, SP4 has organized a very successful *Workshop on Silicon Nitride* for use in solar cell manufacturing. The workshop was attended by over 60 people, including many researchers not involved in CrystalClear. IMEC was so kind to organize and host this event. As is evident from the foregoing, silicon nitride is a key to efficiency enhancement and thus also to cost reduction. **Read more ...**

On 4 and 5 October, SP7 organized a *Workshop on Integration*. BP Solar in Madrid organized and hosted this annual event and did this in an excellent way. "Integration" refers to bringing together the research results from all other sub-projects. The aim of CrystalClear is to demonstrate manufacturing technology for highly efficient, cost-effective crystalline silicon based PV modules. Since this can only be achieved by combining results from the entire project, "integration" is crucial. The Madrid workshop focused on cost modeling and technology road mapping. These are both tools to plan and steer research into the most effective direction, in view of achieving the main aims.

### Reporting and planning

As this newsletter is being prepared many of you working on the Periodic Activity Report 2005, the new Detailed Implementation Plan for months 25 through 42 (January 2006 – June 2007) and the Management Report 2005. The timetable for preparation of these documents and for their compilation by PMO has been communicated some time ago and is also available on the project site. It is crucial that we keep the deadlines, because we want to discuss the results at our General Assembly and we have to deliver the final documents to the EC by February 14, 2006.

### General Assembly 2006

On 2 and 3 February 2006 many of us will visit Madrid to attend the 3<sup>rd</sup> General Assembly (GA) of CrystalClear, officially hosted by the Universidad Politécnica de Madrid. The GA is the annual plenary meeting of representatives of all partners, with officers of the European Commission and external reviewers as guests. At the GA we will look back at 2005, informing attendees on the progress that has been made in all parts of the project, with special emphasis on integration aspects. We will also summarize the financial situation and organizational developments. Further, we will briefly present the plans for the next 18 months, focusing on "what's different or new?". The agenda will leave plenty of time for networking and team building, partly through a common activity yet to be revealed. Enhancing the corporate spirit of CrystalClear is an important target of this meeting.

### Central Project Site (CPS) and public web site

CrystalClear's project site and public web site are fully operational ([www.ipcrystalclear.info/cps](http://www.ipcrystalclear.info/cps) and [www.ipcrystalclear.info](http://www.ipcrystalclear.info)). Access to the central project site and the underlying sub-project sites requires personal codes that are distributed exclusively by webhost DiVa, on request of the sub-project leaders or the project management office (PMO). If you receive this newsletter, you should normally have access to the CPS. It is our aim to make the project site and web site the main place for information and document sharing, archiving, etc. You will find the structure quite adequate for that and once used to it, it will enhance work efficiency and facilitate professional management on all levels of the project. *If you are not yet a regular user, please give it a try!*

### Last but not least

We are approaching the end of the year. This is a very busy period for all of us. Reporting and re-planning are very important but also time-consuming. I would like to thank you very much for your efforts and look forward to meeting many of you at our General Assembly in Madrid. Also on behalf of Wijnand van Hooff, I wish you a relaxing and merry Christmas time and a happy and fruitful new year.

Wim Sinke.