For immediate release

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**Efficiently using the sun's energy**

**Efficient use of solar energy to generate commercial and industrial power has long been a desired goal. Environmental concerns, government targets, and the increasing cost of traditional fuels has generated more research and potential product opportunities in recent years. Whilst a multitude of novel materials (such as CuIn1-xGaxSe2 and CdTe) are being researched and improved, silicon based materials still lead the industry because of their high efficiency and abundance of raw material.**

The high initial energy demands and costs of manufacturing single crystal silicon solar cells reduces the commercial appeal of this material and has resulted in the development of amorphous and polycrystalline variants. Although these aren't as efficient as single crystals, they require significantly less energy to fabricate and still have excellent efficiency when compared to other materials. The compromise between manufacturing effort and cell efficiency is critically important to ensure modules are commercially viable and practical to produce. Optimising cell efficiency, and understanding the parameters that affect efficiency during fabrication, are critical for manufacturers.

Polycrystalline silicon cells consist of a series of multiple domains with different crystal orientations. Where a larger number of small domains are present, the efficiency of these cells is reduced, due to the large number of boundaries between the domains. The Raman image above shows how StreamLine imaging can be used to identify the different domains: we then use this information to quantify the boundary distance. The ability to sample data over very large areas, seamlessly, in minutes, makes StreamLine imaging the ideal method for rapidly surveying these cell modules.

Where high spatial resolution images are required (for example, to determine inter-domain variations and the affect of domain boundaries on device stresses), StreamLine's high resolution imaging is the method of choice. This method enables users to acquire information-rich images on the sub micrometre scale. Renishaw also provides systems for on-line solar panel inspection for quality assurance applications during manufacture.

Renishaw's Raman systems therefore provide the full suite of Raman capabilities that researchers and manufacturers need. This enables a complete understanding of the sample characteristics and morphology on the macro- and micro- scale, whether in the laboratory or on the production line.

For further information on Raman Spectroscopy visit www.renishaw.com/raman

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For further information please contact:

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| Viki WrightMarketing Communications ManagerRenishaw plcOld TownWotton-under-EdgeGloucestershire GL12 7DW UKTel: +44 1453 523815 (direct)Tel: +44 1453 523800 (switchboard)Fax: +44 1453 523901Email: viki.wright@renishaw.com[www.renishaw.com/raman](http://www.renishaw.com/raman) |  |