Perovskite Stability Demonstrated

Queanbeyan, 11 May 2015 – Dyesol Limited (ASX: DYE) is pleased to report that a research team headed by Professor Michael Grätzel has achieved 1000 hours of stability under light soaking and more than 2000 hours under temperatures of 80 ºC – 85 ºC. Further, the team has demonstrated outdoor durability of perovskite solar cells in real-world conditions. Professor Michael Grätzel is chairman of Dyesol's Technology Advisory Board.

In the scientific publication in the journal Energy Technology, in an article titled, "Outdoor Performance and Stability under Elevated Temperatures and Long-Term Light Soaking of Triple-Layer Mesoporous Perovskite Photovoltaics", a team researching at the Center of Nanotechnology, King Abdulaziz University in Jeddah, Saudi Arabia, reported no material loss of power conversion efficiency (PCE) after imposing three critical stability tests. These are tests derived from international standards such as IEC 61646 where cells are subjected to a constant elevated temperature, light soaking, or real-world testing. Outdoor testing, as in these experiments, where very harsh conditions are encountered in the Saudi Arabian desert, is considered to be technologically robust. Stability is critical in establishing the suitability of a technology for warrantable long-life PV products.

The team used a cell architecture which matches one of the systems being developed by Dyesol for commercialisation evaluation. Importantly, this architecture eliminates the use of expensive back contact conductors and also eliminates the use of a conventional organic hole-transport-material, such as spiro-OMeTAD. In addition to perovskite, the active materials are TiO_2 and ZrO_2. Dyesol is working with Cristal in further development of these materials.

Dyesol believes the technology applied in these experimental conditions is protected by patents that Dyesol enjoys access to by virtue of its licence conditions with the École Polytechnique Fédérale de Lausanne (EPFL). No competitive technology in the field of perovskites has yet to demonstrate such promising stability results.

Dyesol has a commercialisation model focussed on the exploitation of solid-state DSC or Perovskite Solar Cells (PSC). Its principal substrates of choice are glass and steel for building-applied (BAPV) and building-integrated (BIPV) photovoltaic applications. Dyesol has established commercial collaborations in the UK and Turkey, and expects to announce further collaborations in key markets during 2015.

About Dyesol Limited

Dyesol is a renewable energy supplier and leader in Solid State Dye Solar Cell (ssDSC) and Perovskite Solar Cell (PSC) technology – 3rd Generation photovoltaic technology that can be applied to glass, metal, polymers or cement. Dyesol manufactures and supplies high performance materials and is focused on the successful commercialisation of ssDSC and PSC photovoltaics. It is a publicly listed company: Australian Securities Exchange ASX (DYE), German Open Market (D5I). Learn more at www.dyesol.com and subscribe to our mailing list in English and German.

About Dye and Perovskite Solar Cell Technology

Solid State Dye Solar Cell (ssDSC) and Perovskite Solar Cell (PSC) technology are photovoltaic technologies based on applying low cost materials in a series of ultrathin layers encapsulated by protective sealants. Dyesol's technology has lower embodied energy in manufacture, produces stable electrical current, and has strong competitive advantage in low light conditions relative to incumbent PV technologies. This technology can be directly integrated into the building envelope to achieve highly competitive building integrated photovoltaics (BIPV).

The key material layers include a hybrid organic-inorganic halide-based perovskite light absorber and nano-porous metal oxide of titanium oxide. Light striking the absorber promotes an electron into the excited state, followed by a rapid electron transfer and collection by the titania layer.

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