Development trends and research hotspots of solar cells

What are the 10 hotspots in PV research?
The top 10 hotspots are deduced (efficiency, performance, film, silicon, design, open circuit voltage, polymer, morphology, oxide, and growth), yielding prominence of the primary roles of devices and materials in PV research.

What are the evolution trends/clusters of solar cells?
Five evolution trends/clusters are examined. Organic solar cells are the mainstream of TSC research and are gradually replaced by the emerging trend of non-fullerenes. Perovskite solar cells are a typical emerging trend, which rejuvenates the traditional silicon solar cells.

What are the hotspots of TSC research?
The research hotspots result from co-occurrence keyword network and are expressed in co-occurring keywords. The top 10 hotspots of TSC research are efficiency, performance, film, silicon, design, open circuit voltage, polymer, morphology, oxide, and growth, respectively. The hottest research keyword is efficiency.

Are perovskite solar cells the future of TSC research?
Organic solar cells are the mainstream of TSC research and are gradually replaced by the emerging trend of non-fullerenes. Perovskite solar cells are a typical emerging trend,which rejuvenates the traditional silicon solar cells. This review provides a visual panorama of TSC research over the past two decades.

What are research hotspots based on a WOS database?
In conclusion,based on WoS database and CiteSpace software,the research and development of TSCs are reviewed. The research hotspots result from co-occurrence keyword networkand are expressed in co-occurring keywords.

Are Si solar cells a Frontier Field of TSC study?
Owing to the rise of perovskite-based TSC,Si solar cells have gained new vitality in more recent years. 133,134 By the composition time of this review,the highest PCE of Si/perovskite TSC is higher than that of single-junction perovskite or c-Si cells,vouching that it is a veritable emerging trend and frontier field of TSC study.

Already exhibiting solar to electrical power conversion efficiencies of over 16 %, organic-inorganic lead halide perovskite solar cells are one of the most promising emerging contenders in...

Temperature development of a hot spot on a solar cell with time during and after applied reverse bias (solid lines). Simulation of a 2x2 mm hot spot placed 2 mm away from the measurement point ...

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The incidence of muscle atrophy or sports injuries is increasing with time and population aging, thereby attracting considerable attention to muscle generation research. Muscle satellite cells, which play an important role in this process, lack comprehensive literature regarding their use for muscle regeneration. Hence, this study aimed to analyze the hotspots and trends ...

In this study, the current-voltage characteristics of mini-modules featuring one single PERC, TOPCon, HJT or PVST solar cell are measured in forward and reverse bias ...

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The paper considers the main trends in the development of the world market of solar photovoltaics over the past few years. It is shown that the industry is a very rapidly ...

Nearly all types of solar photovoltaic cells and technologies have developed dramatically, especially in the past 5 years. Here, we critically compare the different types of photovoltaic ...

The research of organic solar cells (OSCs) has made great progress, mainly attributed to the invention of new active layer materials and device engineering. In this ...

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