Lead sulfide solar cells

To date, owing to efficient surface passivation and interface engineering, PbS-based colloidal quantum dots solar cells (CQDSCs) have shown a record power conversion ...

The deployment of colloidal quantum dots (QDs) in building high-performance solar cells and other optoelectronic applications relies on the passivation of unsaturated ...

Lead sulfide quantum dots (PbS QDs) have been a topic of intense study for over a decade due to their excellent optoelectronic properties and their large versatility in such ...

The initial lead sulfide quantum dot solar cells had an efficiency of 2.9 percent. Since then, improvements have pushed that number into double digits for lead sulfide reaching a record of 12 percent set last year by ...

A low-temperature solution-processed indium incorporated zinc oxide electron transport layer for high-efficiency lead sulfide colloidal quantum dot solar cells ... Colloidal quantum dot solar cells (CQDSCs) have achieved remarkable ...

The intermediate-band solar cell (IBSC) with quantum dots and a bulk semiconductor matrix has potential for high power conversion efficiency, exceeding the Shockley ...

Lead sulfide quantum dots solar cells (PbS QDSCs) have recently received substantial attention due to their unparalleled photoelectric properties that can lead to a new record theoretical efficiency in thin film photovoltaic devices. However, the high voltage losses of PbS QDSCs induced by non-radiative recombination ...

Despite increasing greatly in power conversion efficiency in recent times, lead sulfide quantum dot (PbS QD) solar cells still suffer from a low open circuit voltage (VOC) and fill factor ...

The development of lead sulfide (PbS) colloidal quantum dot (CQD) solar cells has led to significant power conversion efficiency (PCE) improvements in recent years, with record efficiencies now over 15%. Many of ...

junction lead sulfide quantum dot solar cells Vincent M. Goossens,1,4 Nataliia V. Sukharevska,1,4 Dmitry N. Dirin,2,3 Maksym V. Kovalenko,2,3 and Maria A. Loi1,5,* SUMMARY Nowadays, the best lead sulfide (PbS) colloidal quantum dot (CQD) solar cells are primarily demonstrated in the n-p structure, while the

As promising optoelectronic materials, lead sulfide quantum dots (PbS QDs) have attracted great attention. However, their applications are substantially limited by the QD quality and/or complicated synthesis. Herein, a facile new synthesis is developed for highly monodisperse and halide passivated PbS QDs. The new

synthesis is based on a ...

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