Solar Nitrogen

Can solar nitrogen fixation be used for ammonia production?
Solar nitrogen (N 2) fixation is the most attractive way for the sustainable production of ammonia(NH 3),but the development of a highly active,long-term stable and low-cost catalyst remains a great challenge.

Is nitrogen a uniform molecule in the Solar System?
Nitrogen within the solar system is not isotopically uniform: 15 N/14 N ratios in planetary objects such as Earth,Mars,and Jupiter range from 1.9 to 5.9 × 10 -3 (1),some meteoritic materials exhibit ratios as high as 22 × 10 -3 (2),and samples from the lunar surface reveal an unexplained variability between 2.8 and 4.3 × 10 -3 (3).

Is solar-driven nitrogen fixation a sustainable alternative to ammonia and nitrate synthesis?
As a green and environmentally friendly alternative for ammonia and nitrate synthesis, solar-driven nitrogen fixation in aqueous media using a photocatalyst at room temperature and atmospheric pressure presents a tantalizing approach [9 - 13].

What is the product of solar N2 fixation?
At present,the product of solar N 2 fixation is either NH 4+or NO 3-. Few reports described the simultaneous formation of ammonia (NH 4+) and nitrate (NO 3-) by a photocatalytic reaction and the related mechanism.

What is a solar fertilizer?
Solar fertilizers are a special case of "solar chemicals"where the close coupling to agriculture provides unique opportunities,and the product does not compete directly with current ammonia production but rather reduces the downstream usage of ammonia and N-fertilizers.

What are molar energy density and energy per utilizable nitrogen?
The molar energy density per fixed nitrogen represents a lower limit of the energy per utilizable nitrogen, and the energy per utilizable nitrogen is an upper limit on the amount of energy required from solar sources. Hence, these two metrics together provide significant insight into the viability of a solar fertilizer process.

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The solar wind, cometary ices, and inner Solar System bodies exhibit distinct nitrogen isotopic compositions. A synthesis of these analyses suggests that these distinct reservoirs may be the ...

Previous studies on agricultural species have demonstrated that plant biochemical and biophysical constituents derived via radiative transfer models (RTMs), and other parameters, ...

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Solar nitrogen amounts vary greatly from grain to grain, reflecting the amount of time they were directly exposed to the sun. In contrast, the second component is fairly constant in amount and is the dominant component in all grains. This latter component appears to be associated with grain surfaces, both from the depth profiles of Hashizume ...

Non-solar-wind N in the lunar and other solar-system regoliths provides a promising pathway to identifying the source and composition of isotopically heavy N components in the solar system. Disentangling those ...

Recent developments in solar photovoltaic technology and subsystems for ammonia production have made non-organic on-site ammonia production physically possible. This study provides a ...

Lewa Farms solar nitrogen fertilizer . Raising 1 million dollars seed for solar nitrogen fixation commercial container farms. Facebook Twitter LinkedIn. We are a farm technology firm operating for 10 years seeking seed funding to startup a nitrogen fixation container farm product. The technology can convert solar power, and air into usable fertilizer for farms. We have tested this ...

Nitrogen. Our state of the art Nitrogen system comprises of a generator, storage system and compressor - a small footprint with substantial nitrogen produced. Our nitrogen system be used alongside hydrogen, solar and wind projects. This ...

Solar fertilizers provide a route to combine solar energy with nitrogen, oxygen, and water that are available in the air to produce nitrogen-based nutrients for plants. This work ...

Ammonia synthesis under mild conditions is of supreme interest. Photocatalytic nitrogen fixation with water at room temperature and atmospheric pressure is an intriguing strategy. However, the efficiency of this method has been far from satisfied for industrialization, mainly due to the sluggish cleavage of the N?N bond. Herein, we report a carbon-tungstic-acid (WO3?H2O) ...

geiss, j, nitrogen isotopes in the solar-system, geochimica et cosmochimica acta 46: 529 (1982). Google Scholar Geiss, J., Proceedings of the International Cosmic Ray Conference 13 : 3375 (1973).

Nitrogen isotope abundances in the recent solar wind J. S. Kim*, Y. Kim, K. Marti & J. F. Kerridget Department of Chemistry 0317, University of California, San Diego, La Jolla, California 92093 ...

Solar wind nitrogen, implanted in lunar soil samples, exhibits isotopic variations that are related to the time, although not to the duration, of implantation, with earlier samples characterized by lower ratios of nitrogen-15 to nitrogen-14. An increase in the solar nitrogen-15 content during the lifetime of the lunar regolith is probably caused by spallation of oxygen-16 in the surface ...

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Solar-driven photocatalytic nitrogen fixation on transition metal-doped covalent organic frameworks: First-principles study

Solar Nitrogen Fixation - PhD and Postdoctoral Research Opportunities p. 1/3 The research consortium on Solar Nitrogen Fixation formed by the groups of V. Artero (CEA Grenoble, France), C. Bostedt and M. Chergui (EPF Lausanne, Switzerland), V. Krewald (TU Darmstadt, Germany) and S. Schneider (University

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