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2023.02.28.

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KOREA INSTITUTE OF ENERGY RESEARCH

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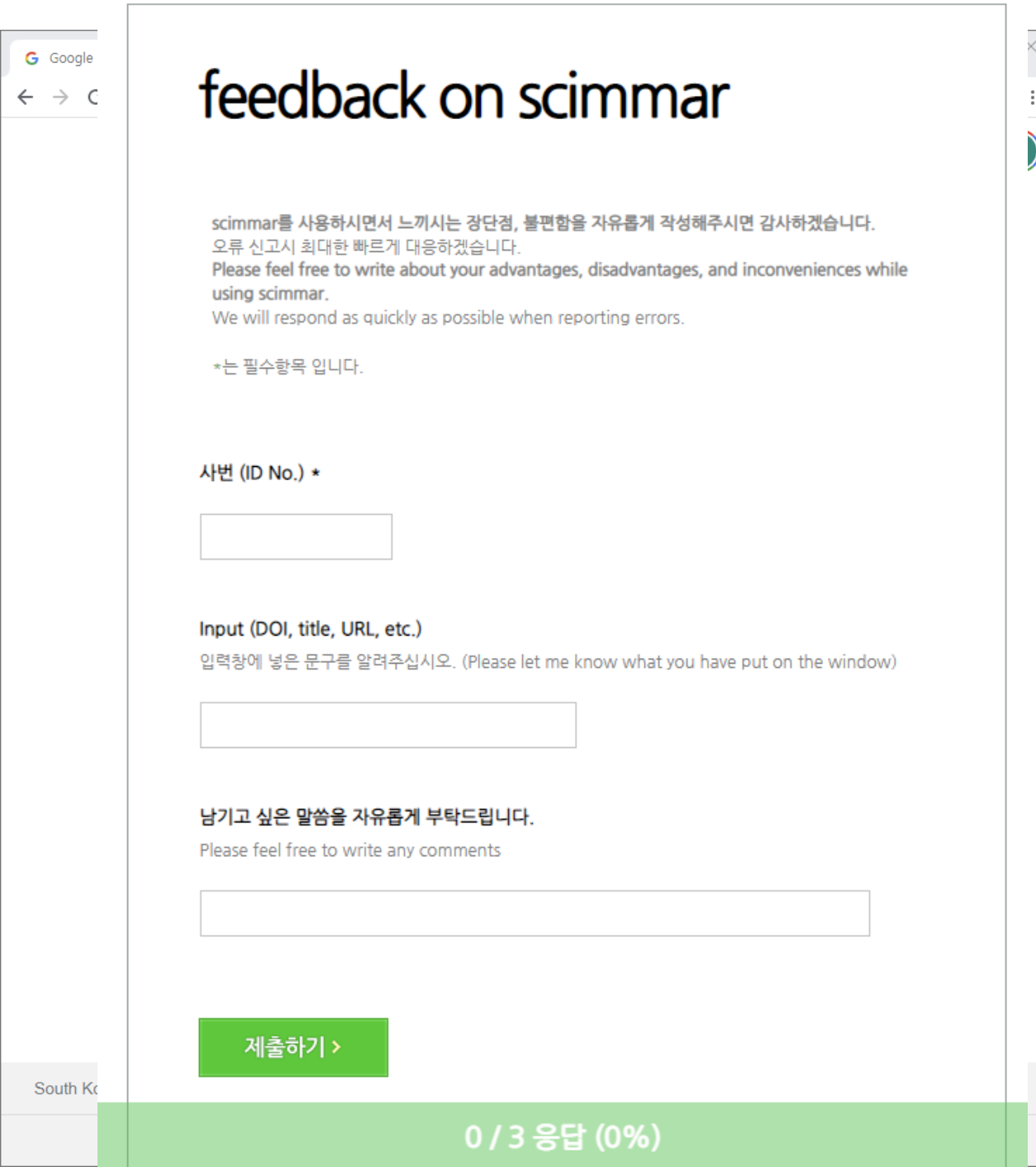
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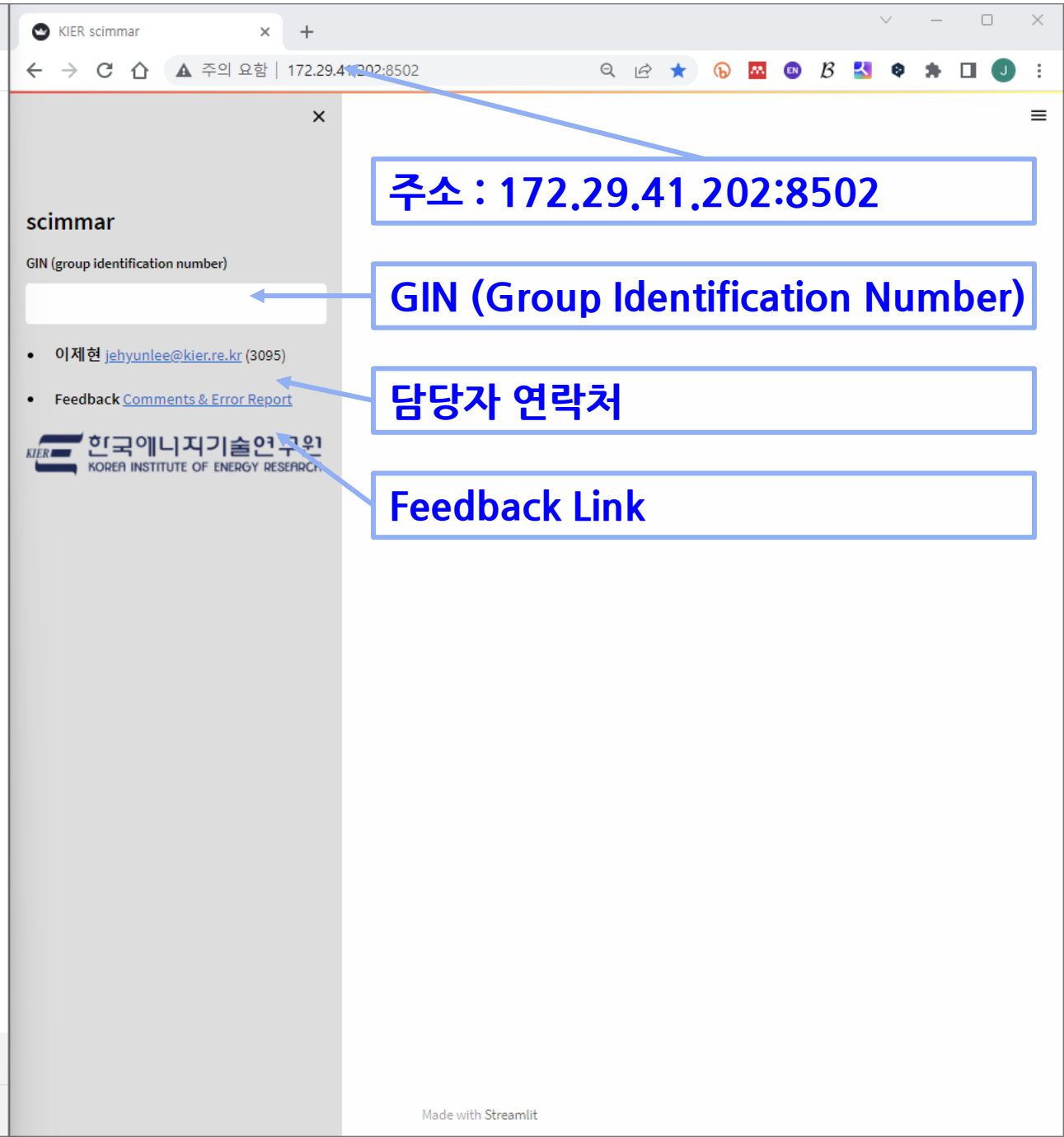
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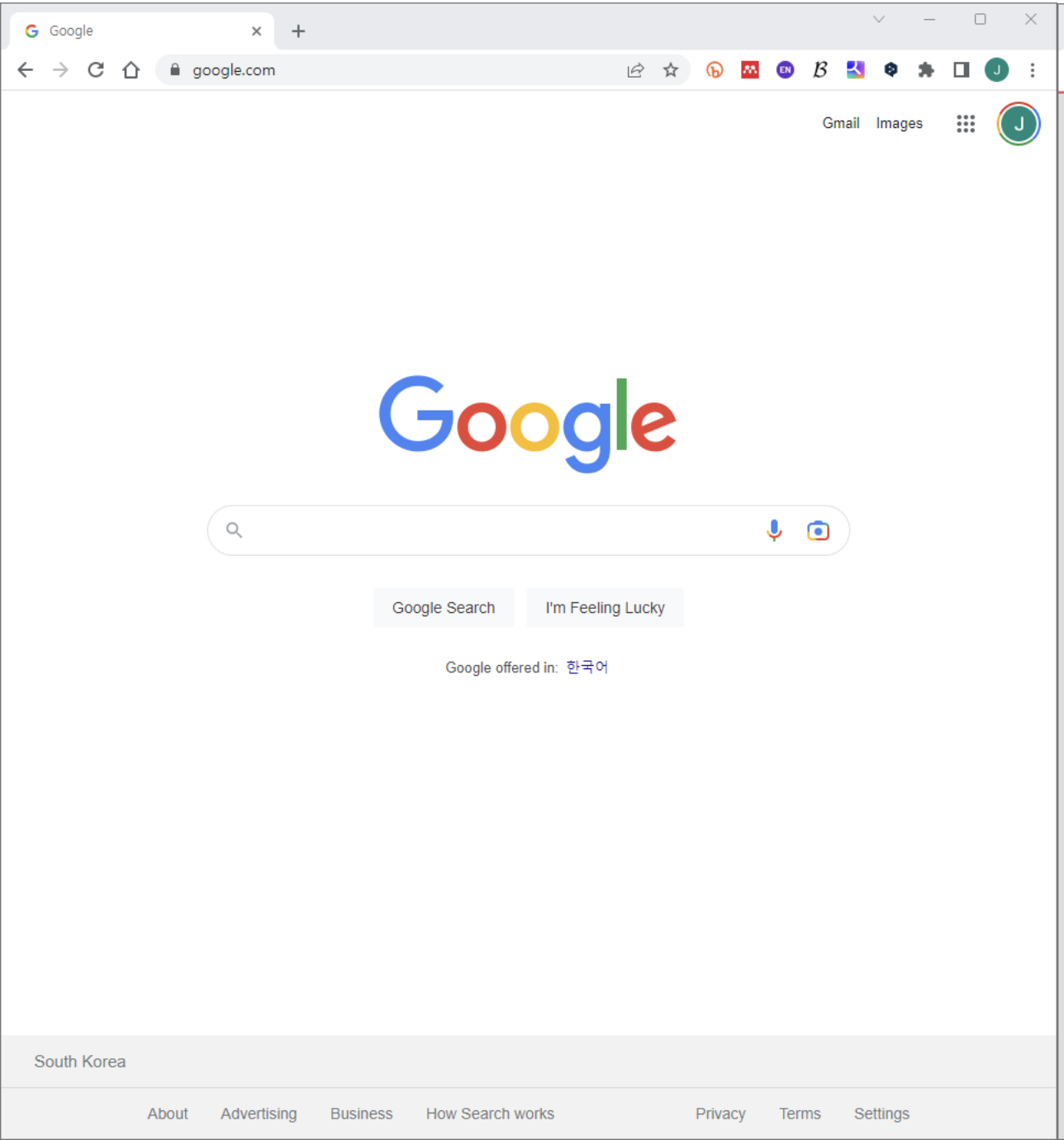
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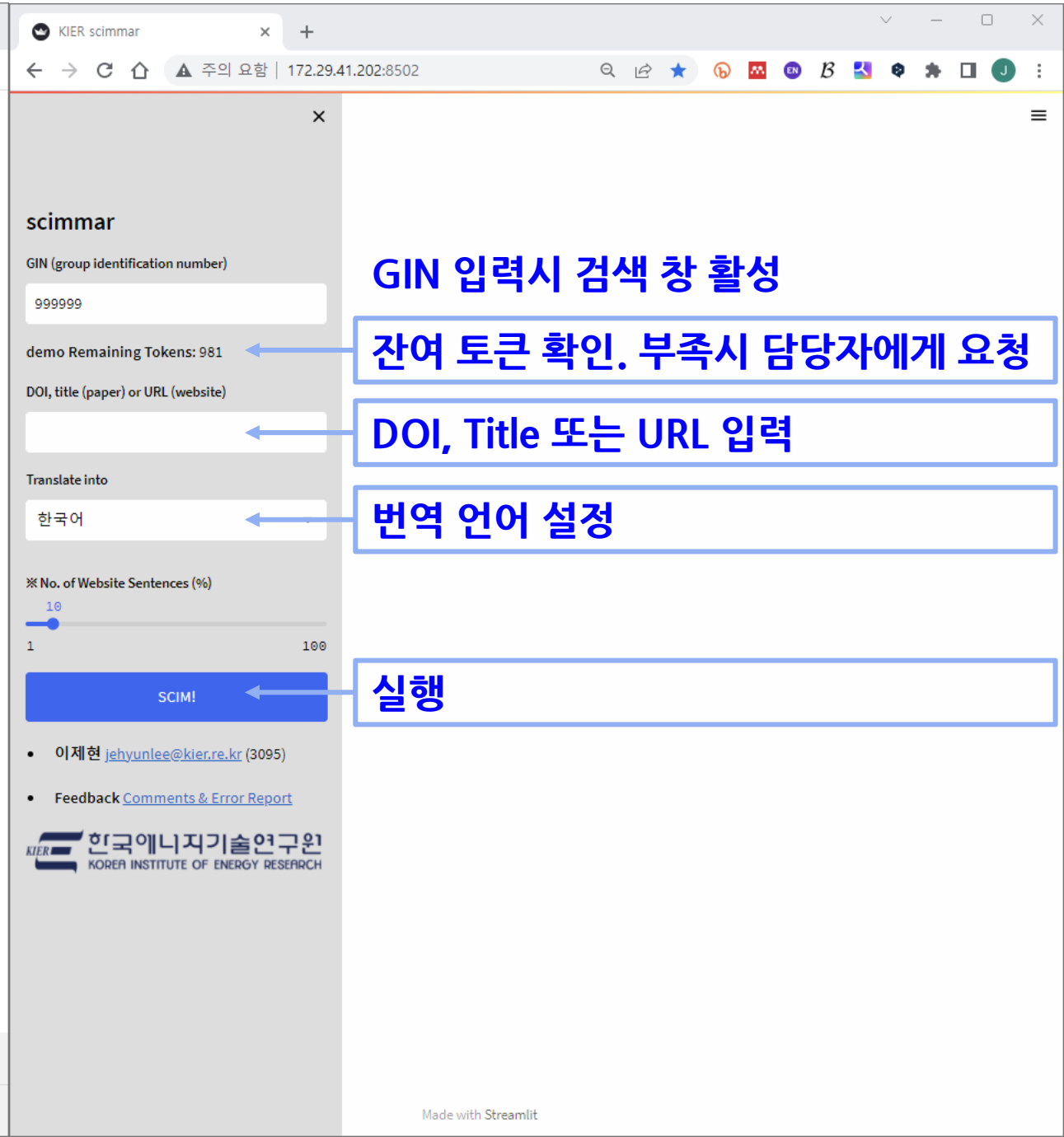
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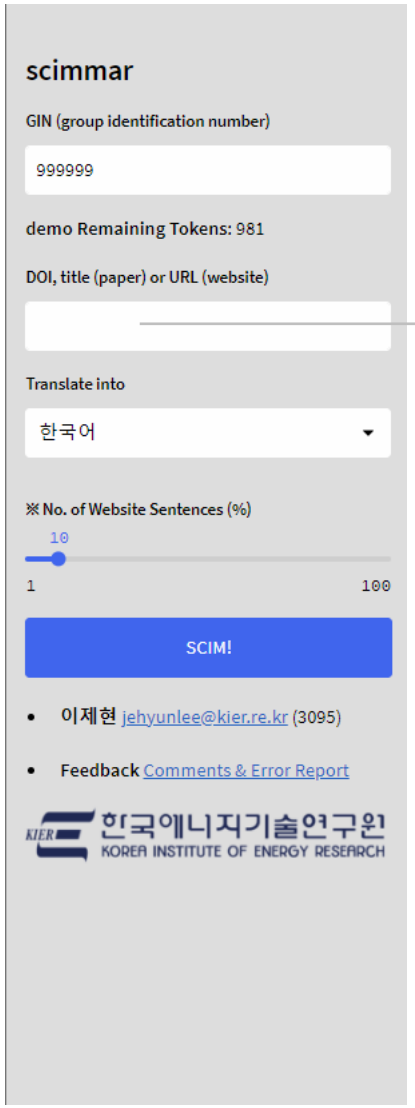

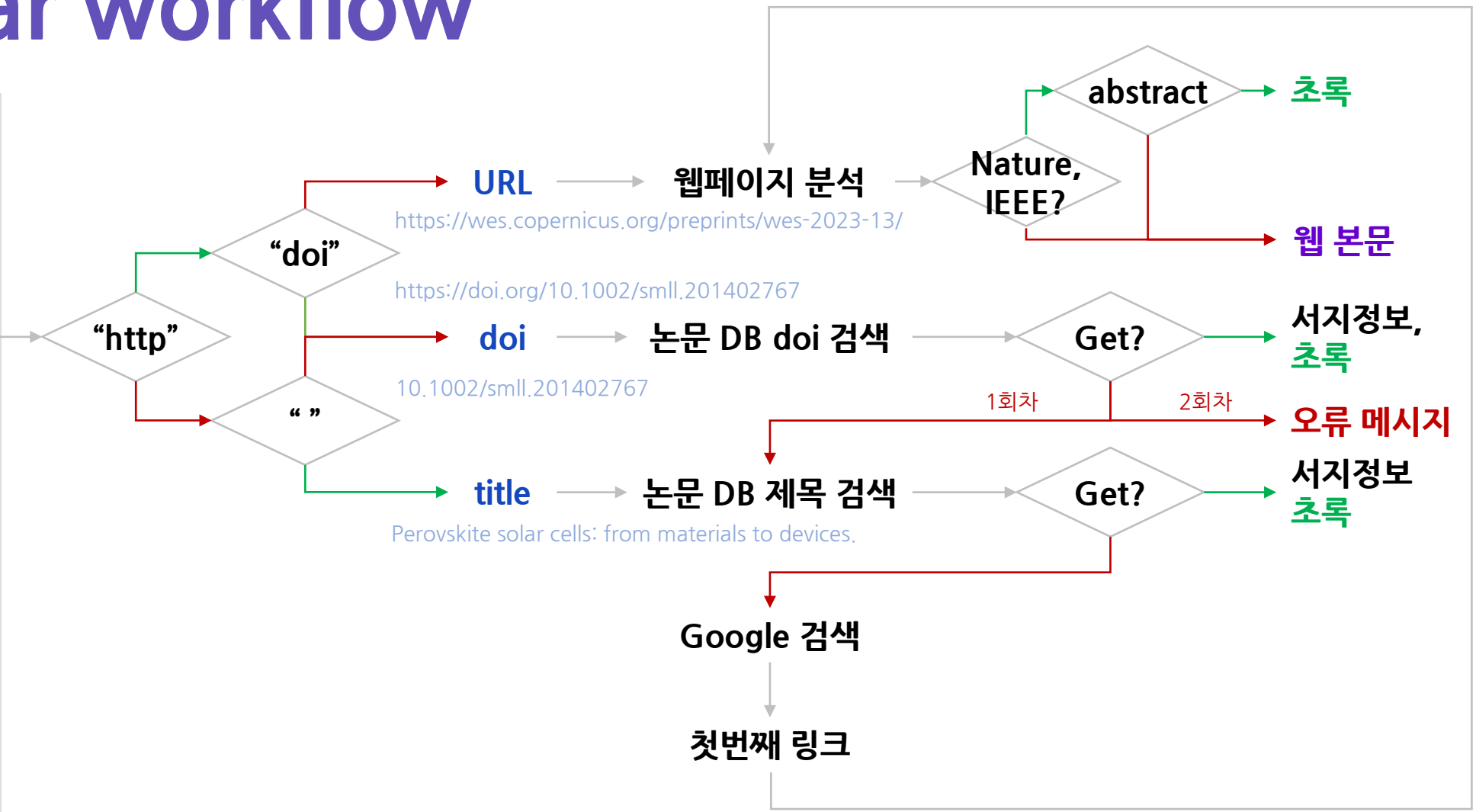

초록 ① 요약문 작성, ② 독창성 추출 , ③ 키워드 추출

웹 본문 ① 추출 요약, ② 키워드 추출

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10.1039/d0ra03183f

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A review of molybdenum disulfide (MoS2) based photodetectors: from ultra-broadband, self-powered to flexible devices

RSC Advances (2020-08-17) H. Nalwa

CITATION COUNT: 81

ABSTRACT SUMMARY

- 2차원 전이 금속 디칼코게나이드(2D TMD)는 조정 가능한 밴드갭으로 인해 광전자 분야에서 많은 주목을 받고 있습니다.
- 높은 캐리어 이동성과 광학적 투명성을 나타내는 이황화몰리브덴(MoS2) 원자층은 초광대역 광검출기 개발에 매우 적합합니다.

- Two-dimensional transition metal dichalcogenides (2D TMDs) have attracted much attention in the field of optoelectronics due to their tunable bandgaps.
- Molybdenum disulfide (MoS2) atomic layers which exhibit high carrier mobility and optical transparency are very suitable for developing ultra-broadband photodetectors.

ORIGINALITY EXTRACTED

- 높은 캐리어 이동성과 광학적 투명성을 나타내는 이황화몰리브덴(MoS2) 원자층은 감시 및 의료에서 광통신에 이르기까지 초광대역 광 검출기를 개발하는 데 매우 적합합니다.
- 이 리뷰에서는 MoS2 기반 광검출기에만 초점을 맞춘 TMD 기반 광검출기에 대한 간략한 소개를 제공합니다.

- Molybdenum disulfide (MoS2) atomic layers which exhibit high carrier mobility and optical transparency are very suitable for developing ultra-broadband photodetectors to be used from surveillance and healthcare to optical communication.
- This review provides a brief introduction to TMD-based photodetectors, exclusively focused on MoS2-based photodetectors

LITERATURE INFORMATION

DOI: 10.1039/d0ra03183f

Citation Download: BibTex, ,

PDF: https://pubs.rsc.org/en/content/articlepdf/2020/ra/d0ra03183f

ABSTRACT (FULL): Two-dimensional transition metal dichalcogenides (2D TMDs) have attracted much attention in the field of optoelectronics due to their tunable bandgaps, strong interaction with light and tremendous capability for developing diverse van der Waals heterostructures (vdWHs) with other materials. Molybdenum disulfide (MoS2) atomic layers which exhibit high carrier mobility and optical transparency are very suitable for developing ultra-broadband photodetectors to be used from surveillance and healthcare to optical communication. This review provides a brief introduction to TMD-based photodetectors, exclusively focused on MoS2-based photodetectors. The current research advances show that the photoresponse of atomic layered MoS2 can be significantly improved by boosting its charge carrier mobility and incident light absorption via forming MoS2 based plasmonic nanostructures, halide perovskites–MoS2 heterostructures, 2D–0D MoS2/quantum dots (QDs) and 2D–2D MoS2 hybrid vdWHs, chemical doping, and surface functionalization of MoS2 atomic layers. By utilizing these different integration strategies, MoS2 hybrid heterostructure-based photodetectors exhibited remarkably high photoresponsivity raging from mA W−1 up to 1010 A W−1, detectivity from 107 to 1015 Jones and a photoresponse time from seconds (s) to nanoseconds (10−9 s), varying by several orders of magnitude from deep-ultraviolet (DUV) to the long-wavelength infrared (LWIR) region. The flexible photodetectors developed from MoS2-based hybrid heterostructures with graphene, carbon nanotubes (CNTs), TMDs, and ZnO are also discussed. In addition, strain-induced and self-powered MoS2 based photodetectors have also been summarized. The factors affecting the figure of merit of a very wide range of MoS2-based photodetectors have been analyzed in terms of their photoresponsivity, detectivity, response speed

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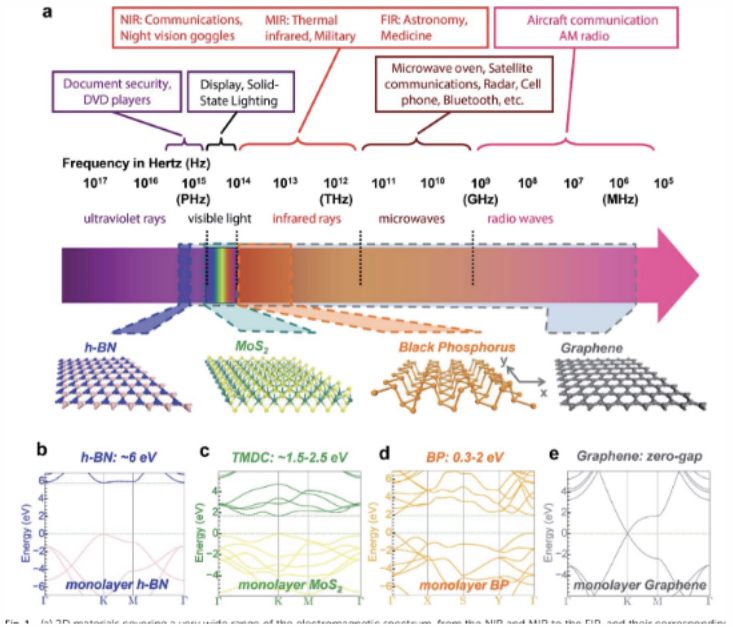
DOI: 10.1039/d0ra03183f

Citation Download: BibTex

PDF: https://pubs.rsc.org/en/content/articlepdf/2020/ra/d0ra03183f

ABSTRACT (FULL): Two-dimensional transition metal dichalcogenides (2D TMDs) have attracted much attention in the field of optoelectronics due to their tunable bandgaps, strong interaction with light and tremendous capability for developing diverse van der Waals heterostructures (vdWHs) with other materials. Molybdenum disulfide (MoS_2) atomic layers which exhibit high carrier mobility and optical transparency are very suitable for developing ultra-broadband photodetectors to be used from surveillance and healthcare to optical communication. This review provides a brief introduction to TMD-based photodetectors, exclusively focused on MoS_2-based photodetectors. The current research advances show that the photoresponse of atomic layered MoS_2 can be significantly improved by boosting its charge carrier mobility and incident light absorption via forming MoS_2 based plasmonic nanostructures, halide perovskites–MoS_2 heterostructures, 2D–0D MoS_2/quantum dots (QDs) and 2D–2D MoS_2 hybrid vdWHs, chemical doping, and surface functionalization of MoS_2 atomic layers. By utilizing these different integration strategies, MoS_2 hybrid heterostructure-based photodetectors exhibited remarkably high photoresponsivity raging from mA W^{-1} up to 1010 A W^{-1}, detectivity from 107 to 1015 Jones and a photoresponse time from seconds (s) to nanoseconds (10^{-9} s), varying by several orders of magnitude from deep-ultraviolet (DUV) to the long-wavelength infrared (LWIR) region. The flexible photodetectors developed from MoS_2-based hybrid heterostructures with graphene, carbon nanotubes (CNTs), TMDs, and ZnO are also discussed. In addition, strain-induced and self-powered MoS_2 based photodetectors have also been summarized. The factors affecting the figure of merit of a very wide range of MoS_2-based photodetectors have been analyzed in terms of their photoresponsivity, detectivity, response speed, and quantum efficiency along with their measurement wavelengths and incident laser power densities. Conclusions and the future direction are also outlined on the development of MoS_2 and other 2D TMD-based photodetectors.

FIGURE:



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Perovskite solar cells: from materials to dev

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1 100

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Perovskite solar cells: from materials to devices.

Small (None) H. Jung, N. Park

CITATION COUNT: 1077

ABSTRACT SUMMARY

- 이 리뷰에서는 고성능 페로브스카이트 태양 전지에 대한 더 나은 이해와 통찰력을 제공하기 위해 광전자 및 유전체 특성을 포함한 페로브스카이트 재료의 기본 기초를 설명합니다.

- In this review, basic fundamentals of perovskite materials including opto-electronic and dielectric properties are described to give a better understanding and insight into high-performing perovkite solar cells.

ORIGINALITY EXTRACTED

- 2012년 PCE 9.7%의 장기 내구성 고체 페로브스카이트 태양전지에 대한 첫 번째 보고 이후, 2014년에는 19.3%의 높은 PCE가 입증되었고, 2014년에는 17.9%의 인증된 PCE가 나타났습니다.
- 그럼에도 불구하고 이러한 높은 광전지 성능의 기반에는 풀어야 할 퍼즐이 많이 있습니다.

- Since the first report on a long-term durable solid-state perovskite solar cell with a PCE of 9.7% in 2012, a PCE as high as 19.3% was demonstrated in 2014, and a certified PCE of 17.9% was shown in 2014.
- Nevertheless, there are lots of puzzles to unravel the basis for such high photovoltaic performances

LITERATURE INFORMATION

DOI: 10.1002/smll.201402767

Citation Download: BibTex

ABSTRACT (FULL): Perovskite solar cells based on organometal halide light absorbers have been considered a promising photovoltaic technology due to their superb power conversion efficiency (PCE) along with very low material costs. Since the first report on a long-term durable solid-state perovskite solar cell with a PCE of 9.7% in 2012, a PCE as high as 19.3% was demonstrated in 2014, and a certified PCE of 17.9% was shown in 2014. Such a high photovoltaic performance is attributed to optically high absorption characteristics and balanced charge transport properties with long diffusion lengths. Nevertheless, there are lots of puzzles to unravel the basis for such high photovoltaic performances. The working principle of perovskite solar cells has not been well established by far, which is the most important thing for understanding perovksite solar cells. In this review, basic fundamentals of perovskite materials including opto-electronic and dielectric properties are described to give a better understanding and insight into high-performing perovskite solar cells. In addition, various fabrication techniques and device structures are described toward the further improvement of perovskite solar cells.

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Perovskite solar cells: from materials to dev

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초록을 찾을 수 없습니다.

Flexible Perovskite Solar Cells: From Materials and Device Architectures to Applications

ACS Energy Letters (2022-03-22) Yuanji Gao, Keqing Huang, Caoyu Long, Yang Ding, Jian-hui Chang, Dou Zhang, L. Etgar, Mingzhen Liu, Jian Zhang, Jun-liang Yang

CITATION COUNT: 9

ABSTRACT SUMMARY

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ORIGINALITY EXTRACTED

LITERATURE INFORMATION

DOI: None

Citation Download: BibTex

ABSTRACT (FULL):

찾는 논문 : Perovskite solar cells: from materials to devices
입력 문구 : Perovskite solar cells: from materials to device
찾은 논문 : Flexible Perovskite Solar Cells: From Materials and Device Architectures to Applications

Title 입력시 해당 단어들이 가장 유사하게 포함된 논문을 탐색함. 간혹 오타로 인해 다른 논문이 검색됨.

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NEWS Q&A | 28 February 2023

Girl who died of bird flu did not have widely-circulating variant

Scientist who sequenced the virus isolated from a Cambodian girl says it is not the strain causing mass deaths in birds globally.

Smriti Mallapaty

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Bird flu outbreak in mink sparks concern about spread in people

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Virology | Public health | Infection

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DOI, title (paper) or URL (website)

https://www.nature.com/articles/d41586-0

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FIGURE:

d41586-023-00585-1_24069734.jpg

SHORTEN (words): 원문 6083 → 요약 903(14.8%) → 번역 415(6.8%)

ARTICLE SUMMARY

- 이번 달 H5N1로 사망한 캄보디아 소녀는 걱정스러운 2.3.4.4b 바이러스에 감염되지 않았습니다.
- 과학자들은 처음에 이 소녀가 현재 일부 포유류 종에 널리 퍼져 있으며 2020년 이후 소수의 사람들을 감염시킨 바이러스에 감염되었을 수 있다고 우려했습니다.
- 그는 시퀀싱 된 바이러스가이 지역의 닭과 오리에서 최소 10 년 동안 발견 된 그룹에 속한다고 말했지만,이 소녀는 9 년 만에 국내에서 H5N1이 발견 된 최초의 사람입니다.
- 어린 소녀로부터 바이러스 샘플을 언제 받았나요?
- 아직 많은 요인을 조사해야 하지만, 코로나19 팬데믹으로 인해 전 세계적으로 농업 관행에 많은 변화가 있었으며, 이는 확산의 여건을 조성했을 수 있습니다.
- 여행 가이드와 같은 많은 사람들이 일을 할 수 없어 수입과 가족을 위한 식량 공급원을 보충해야 했습니다.

- The Cambodian girl who died of H5N1 this month did not have the worrisome 2.3.4.4b virus..
- Scientists were initially concerned that the girl might have been infected with the widely circulating virus that is now spreading in some mammal species and has infected a handful of people since 2020..
- He says the sequenced virus belongs to a group that has been found in chickens and ducks in the region for at least a decade, although the girl is the first person to be detected with H5N1 in the country in nine years..
- When did you receive the virus sample from the young girl?.
- A lot of factors still need to be investigated, but there have been a lot of global changes in agricultural practices owing to the COVID-19 pandemic that could have created the conditions for a spillover..
- Many people, for example tour guides, couldn't work and had to supplement their incomes and sources of food for their families.

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https://www.nature.com/articles/d41586-0

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ARTICLE SUMMARY

- 이번 달 H5N1로 사망한 캄보디아 소녀는 걱정스러운 2.3.4.4b 바이러스에 감염되지 않았습니다.
- 프놈펜에 있는 캄보디아 파스퇴르 연구소의 바이러스학자인 에릭 칼슨은 네이처와의 인터뷰에서 자신과 동료들이 소녀의 바이러스 샘플 전체 게놈을 하루 만에 염기서열 분석하여 공공 저장소인 GISAID에 데이터를 공유하게 된 과정을 다음과 같이 설명했습니다.
- 그는 시퀀싱 된 바이러스가이 지역의 닭과 오리에서 최소 10 년 동안 발견 된 그룹에 속한다고 말했지만,이 소녀는 9 년 만에 국내에서 H5N1이 발견 된 최초의 사람입니다.
- 소녀가 바이러스에 노출된 경위에 대한 조사가 진행 중입니다.
- 어린 소녀로부터 바이러스 샘플을 언제 받았나요?
- 2월 22일 오후 5시에 샘플을 받았고, 24시간 이내에 시퀀싱을 완료했습니다.
- 이는 코로나19 팬데믹으로 인해 데이터를 매우 빠르게 시퀀싱하고 공유할 수 있는 능력이 향상되었음을 잘 보여줍니다.
- 샘플의 바이러스 부하는 전체 인플루엔자 게놈을 한 번에 증폭할 수 있을 만큼 충분히 높았습니다.
- 우리는 가능한 한 빨리 바이러스의 염기 서열을 파악하고 공개하는 데 중점을 두었습니다.
- 이 바이러스는 이 지역의 풍토병 균주인 클레이드 2.3.2.1c에 속합니다.
- 연구원들은 2.3.2.1c를 꽤 오랫동안 모니터링해 왔으며, 전염성과 병원성에 대한 합리적인 판단을 내릴 수 있는 정보를 보유하고 있습니다.
- 그러나 인수공통전염병이 발생할 때마다 우리는 이를 가장 중요하게 다루어야 합니다.
- 인수공통전염병 확산에 대해 우려되는 점은 무엇인가요?
- 바이러스, 특히 인플루엔자와 같은 RNA 바이러스는 매우 난잡하며 새로운 숙주에 빠르게 적응합니다.
- 코로나19를 유발하는 바이러스에서도 이러한 현상을 확인했습니다.
- 이러한 적응은 잠재적으로 사람들 사이에 전염될 수 있는 바이러스를 초래할 수 있기 때문에 우려스러운 일입니다.
- 아버지의 샘플도 시퀀싱하고 있나요?
- 그러나 종종 부분적인 염기서열 이상을 확보하기에는 바이러스 부하가 충분하지 않습니다.

- The Cambodian girl who died of H5N1 this month did not have the worrisome 2.3.4.4b virus..
- Erik Karlsson, a virologist at the Pasteur Institute of Cambodia in Phnom Penh, spoke to Nature about how he and his colleagues sequenced the full genome of the virus sample from the young girl in less than a day before sharing the data on the public repository GISAID..
- He says the sequenced virus belongs to a group that has been found in chickens and ducks in the region for at least a decade, although the girl is the first person to be detected with H5N1 in the country in nine years..
- Investigations into how the girl was exposed to the virus are underway..
- When did you receive the virus sample from the young girl?.
- We received the sample at about 5 p.m. on 22 February, and it was sequenced within 24 hours..
- This really exemplifies the way that the COVID-19 pandemic has increased our capacity to sequence and share data very quickly..
- The viral load in the sample was high enough that we could amplify the whole influenza genome in one go..
- Our focus has been to get the virus sequenced and into the public domain as fast as possible..
- The virus belongs to clade 2.3.2.1c, which is an endemic strain in the region..
- Researchers have been monitoring 2.3.2.1c for quite some time, and have information on it to make reasonable judgments about its transmissibility and pathogenicity..
- But anytime there is a zoonotic spillover, we must treat it with the utmost importance..
- What is worrisome about zoonotic spillovers?.
- Viruses, especially RNA viruses such as influenza, are extremely promiscuous and will quickly adapt to a new host..
- We've seen this with the virus that causes COVID-19..
- That is concerning because that adaptation could result in a virus that could potentially transmit between people..
- Are you also sequencing samples from the father?.
- But often, there isn't enough viral load to get more than just partial sequences..

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Article | Published: 01 March 2023

Orbital Period Change of Dimorphos Due to the DART Kinetic Impact

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Nature (2023) | Cite this article

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Abstract

The Double Asteroid Redirection Test (DART) spacecraft successfully performed the first test of a kinetic impactor for asteroid deflection by impacting Dimorphos, the secondary of near-Earth binary asteroid (65803) Didymos, and changing the orbital period of Dimorphos. A change in orbital period of approximately 7 minutes was expected if the incident momentum from the DART spacecraft was directly transferred to the asteroid target in a perfectly inelastic collision[1], but studies of the probable impact conditions and asteroid properties

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Orbital Period Change of Dimorphos Due to the DART Kinetic Impact

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URL: https://www.nature.com/articles/s41586-023-05805-2

Detected : Nature

SHORTEN (words): 원문 1440 → 요약 725(50.3%) → 번역 313(21.7%)

ABSTRACT SUMMARY

- 이중 소행성 방향 전환 시험(DART) 우주선은 디모포스 소행성에 충돌하여 소행성 편향에 대한 운동 충격기의 첫 번째 테스트를 성공적으로 수행했습니다.
- 완벽한 비탄성 충돌에서 DART 우주선의 충돌 운동량이 소행성 표적에 직접 전달될 경우 약 7분의 궤도주기 변화가 예상되었습니다.

- The Double Asteroid Redirection Test (DART) spacecraft successfully performed the first test of a kinetic impactor for asteroid deflection by impacting Dimorphos.
- A change in orbital period of approximately 7 minutes was expected if the incident momentum from the DART spacecraft was directly transferred to the asteroid target in a perfectly inelastic collision.

ORIGINALITY EXTRACTED

- 이중 소행성 방향 전환 시험(DART) 우주선은 지구에 가까운 쌍성 소행성(65803) 디디모스의 두 번째 소행성인 디모포스와 충돌하여 디모포스의 궤도 주기를 변경함으로써 소행성 편향을 위한 운동 충격기의 첫 번째 테스트를 성공적으로 수행했습니다.
- 우리는 디디모스4-6에 대한 디모포스의 충돌 전 궤도 파라미터를 정확하게 결정하기 위해 광곡선 관측을 사용했습니다.
- 여기에서는 DART 운동 충격으로 인한 디모포스의 궤도 주기의 변화가 -33.0 ± 1.0(3𝜎) 분으로 보고합니다.
- 새로운 지구 기반 광곡선 및 레이더 관측을 사용하여 두 가지 독립적 인 접근 방식으로 궤도주기 변화에 대한 동일한 값을 결정했습니다.
- 이 큰 궤도주기 변화는 분출물이 DART 우주선이 운반 한 것 이상으로 소행성에 상당한 양의 운동량을 기여했음을 시사합니다.

- The Double Asteroid Redirection Test (DART) spacecraft successfully performed the first test of a kinetic impactor for asteroid deflection by impacting Dimorphos, the secondary of near-Earth binary asteroid (65803) Didymos, and changing the orbital period of Dimorphos.
- In the years prior to impact, we used lightcurve observations to accurately determine the pre-impact orbit parameters of Dimorphos with respect to Didymos4–6.
- Here we report the change in the orbital period of Dimorphos as a result of the DART kinetic impact to be -33.0 ± 1.0 (3𝜎) minutes.
- Using new Earth-based lightcurve and radar observations, two independent approaches determined identical values for the change in the orbital period.
- This large orbit period change suggests that ejecta contributed a significant amount of momentum to the asteroid beyond what the DART spacecraft carried.

LITERATURE INFORMATION

DOI: 10.1038/s41586-023-05805-2

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