

NUCLEAR SCIENCE REFERENCES

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a passion for discovery



U.S. DEPARTMENT OF
ENERGY

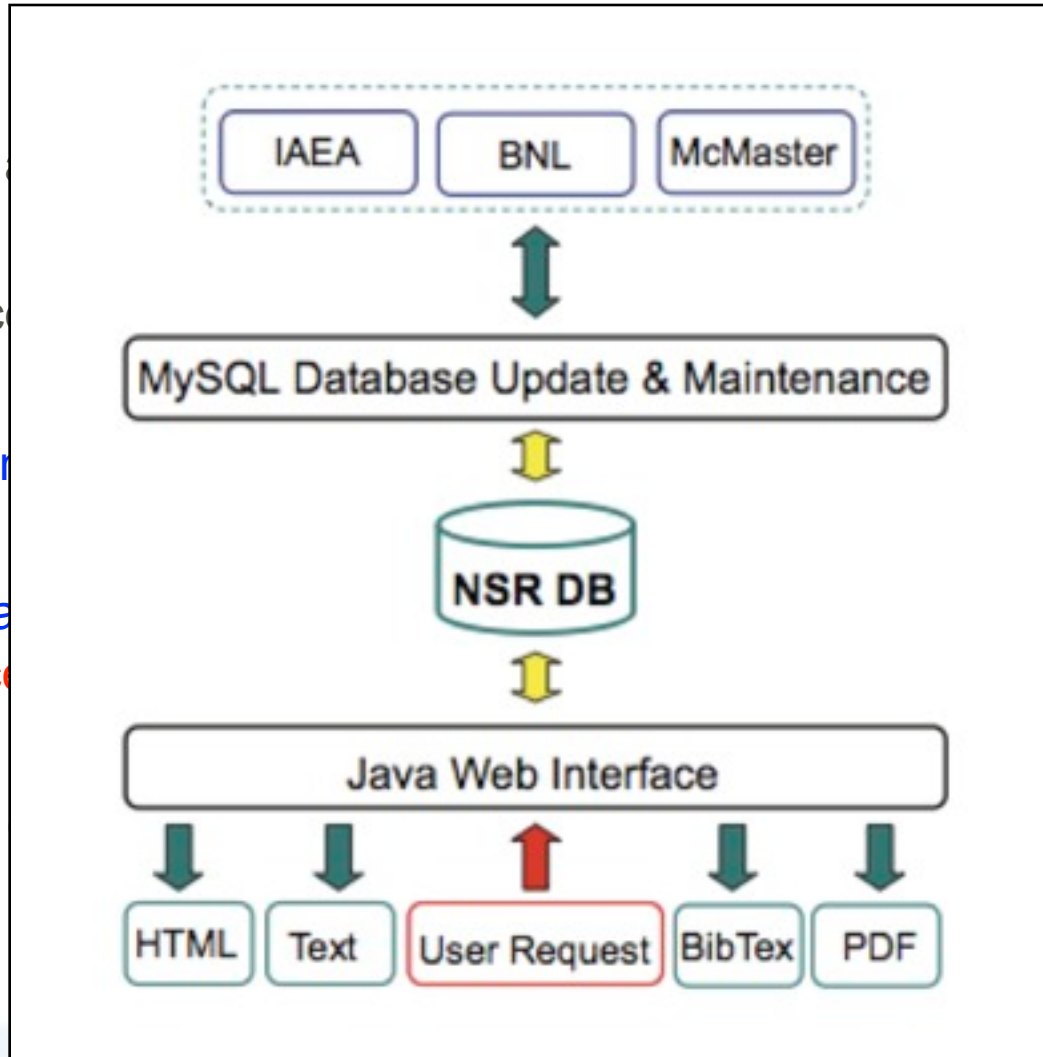
Office of
Science

NSR

- ❖ NSR is a collaborative project within USNDP
- ❖ Three centers contributed to NSR on the regular basis
- ❖ Unfortunately, IAEA stopped contributing to NSR
- ❖ Workload was redistributed between NNDC & Bratislava, our resources are stretched
- ❖ Overall database management is performed by NNDC

NSR

- ❖ NSR is
- ❖ Three c
- ❖ Unfortun
- ❖ Workload resource
- ❖ Overall



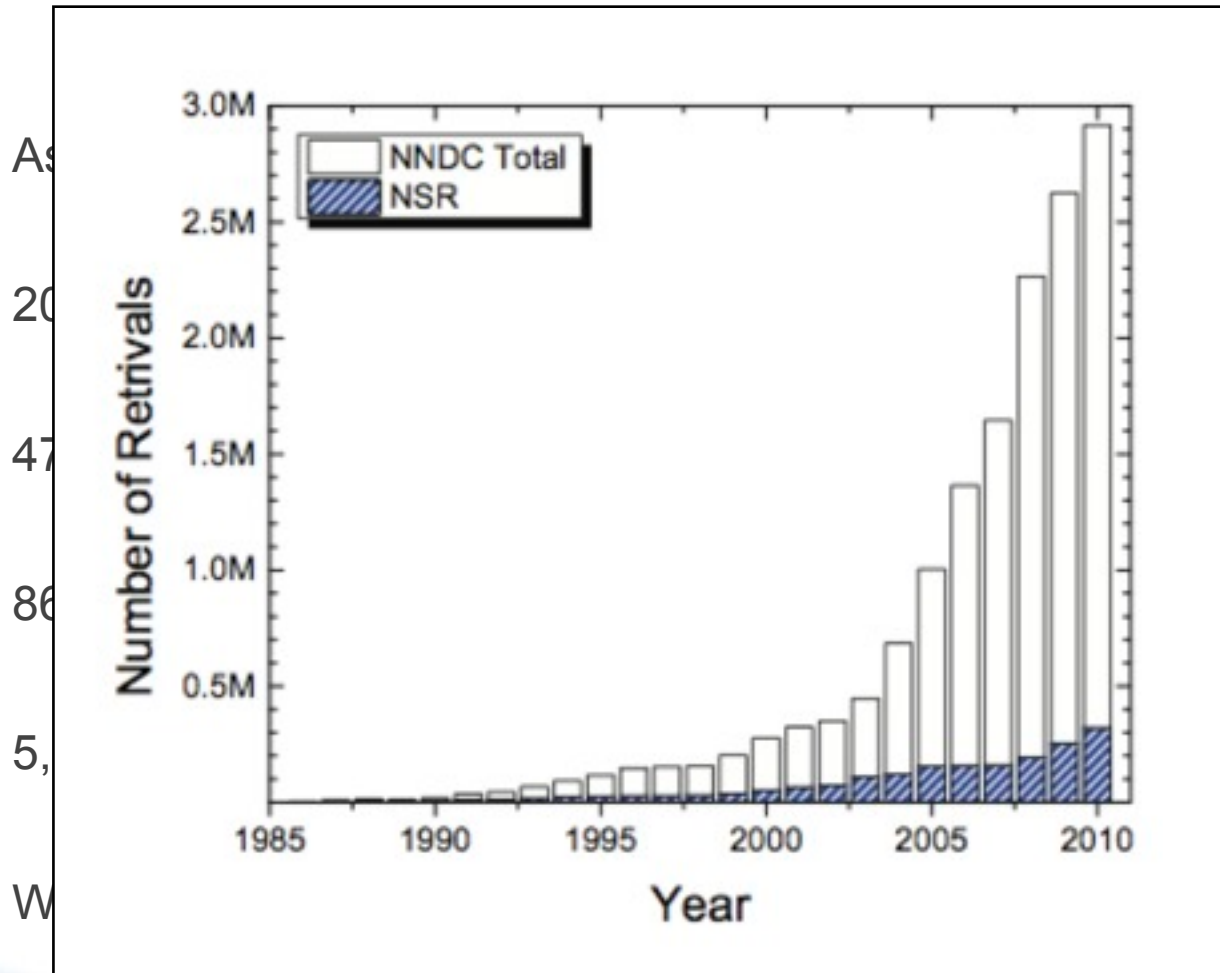
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STATISTICS

As of January 2011:

- ❖ 201,848 Journal articles, proceedings, reports, ...
- ❖ 473 Journals
- ❖ 86,837 Authors
- ❖ 5,002 Nuclides
- ❖ Web usage statistics growth and wide variety of retrievals

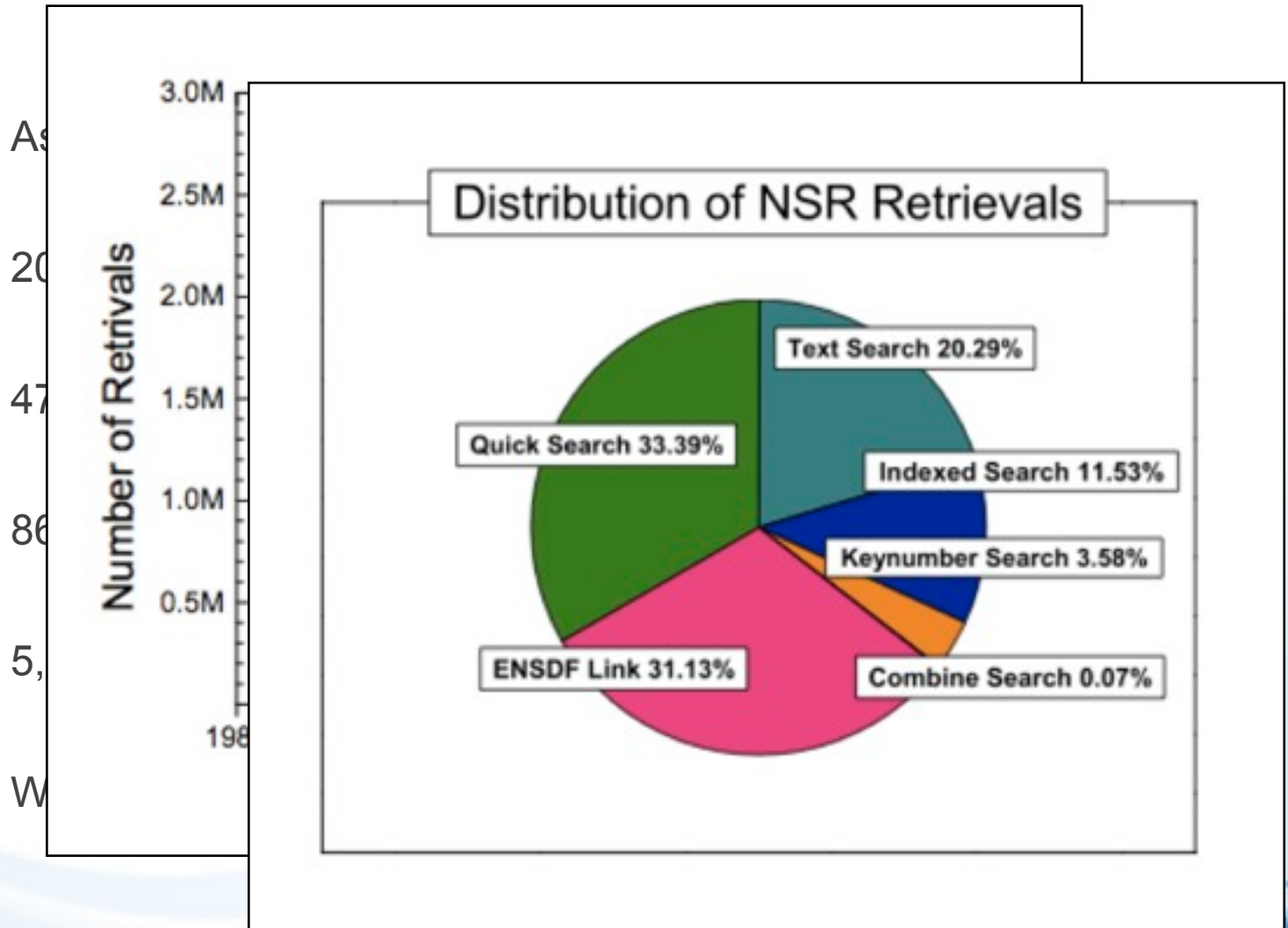
STATISTICS



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STATISTICS



NSR OPERATION IN 2011

- ❖ Total number of NSR entries in FY 2011 is 3,802 compare with 3,818 in FY 2010
- ❖ Total number of keyworded articles is 2,191
- ❖ Total number of NSR corrections (quality assurance, Cn) is 340
- ❖ Total number of NSR updates in FY 2011 is 102
- ❖ Total number of NSR entries as of 11/11/2011 is 204,969;
- ❖ NSR was distributed to Vienna and Berkeley, 4 issues of Recent Refs
- ❖ Hardware challenges: Do we really need Recent References? <100 ret/month

XSB, INC.

- ❖ The pilot 50K project with XSB, Inc has been completed
- ❖ It provides tentative keywords and templates for PRC and Nuclear Physics A, this already helped Joann enormously
- ❖ Unfortunately pilot keywords are not great
- ❖ Further improvements have been discussed with XSB, Inc.
- ❖ Additional comments from Balraj

EXFOR INTEGRATION

- ❖ EXFOR Web integration was performed to engage nuclear reaction community and extend NSR user base
- ❖ *American Physical Society is interested*

EXFOR INTEGRATION

NNDC National Nuclear Data Center

BROOKHAVEN NATIONAL LABORATORY Home

NNDC Databases: NuDat | NSR | XUNDL | ENSDF | MIRDB | ENDF | CSISRS | Sigma

Nuclear Science References (NSR)

Web Integration of NSR and EXFOR Databases
Database version of December 17, 2010

The NSR database is a bibliography of nuclear physics articles, indexed according to content and spanning 100 years of research. Over 80 journals are checked on a regular basis for articles to be included. For more information, see the [help page](#). The NSR database schema and web applications have undergone some recent changes. This is a revised version of the NSR Web Interface.

Quick Search | Text Search | Indexed Search | Keynumber Search | Combine View | Recent References

Author

Brown or B.A. Brown

Nuclide

31Ma or ca-38

Reaction

n.g or (n,g) or 16O, 16O

Publication Year from to

Reference Type All Experiment Theory

Output Format HTML BibTex Text

Database Manager: Boris Pritychenko, NNDC, Brookhaven National Laboratory
Web Programming: Boris Pritychenko, NNDC, Brookhaven National Laboratory
Data Source: NNDC, Brookhaven National Laboratory,
MDS, International Atomic Energy Agency,
INDG, McMaster University



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reaction



NSR Query Results

Publication year range : 1910 to 2011
Primary and secondary references.
Experimental quantity required.

Output year order : Descending
Format : Normal

NSR database version of December 17, 2010.

Search : Nuclide = ^{19}F and Reaction = (N,G)

Found 35 matches.

[Back to query form](#)



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The NSR database contains years of research information, see the changes. This is a



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Quick Search

2008FIZZ Proc. 2007 International Workshop on Compound-Nuclear Reactions and Related Topics, Yosemite Nat. Park, Ca., 22-26 OCT. 2007, J.Escher, F.S.Dietrich, T.Kawano, I.J.Thompson, Eds. p.26 (2008); AIP CONF.PROC. 1005 (2008)

R.B.Firestone, M.Krticka, D.P.McNabb, B.Sleaford, U.Agvaanluvsan, T.Belgysa, Zs.Revay

New Methods for the Determination of Total Radiative Thermal Neutron Capture Cross Sections

NUCLEAR REACTIONS ^1H , ^6Li , ^9Be , ^{10}B , ^{12}C , ^{14}N , ^{16}O , ^{19}F , ^{23}Na , ^{24}Mg , ^{27}Al , ^{28}Si , ^{31}P , ^{32}S , ^{35}Cl , ^{39}K , ^{102}Pd , ^{104}Pd , ^{106}Pd , ^{108}Pd , $^{110}\text{Pd}(n, \gamma)$, E=thermal; measured cross sections; $^{10}\text{B}(n, \alpha)$, E=thermal; measured cross sections; $^{25}\text{Mg}(n, \gamma)$, E=thermal; $^{13}\text{C}(n, \gamma)$, E=thermal; $^{105}\text{Pd}(n, \gamma)$, E=thermal; measured E_γ , I_γ ; deduced cross section balance. compared experimental and calculated depopulation.

doi: 10.1063/1.2920738

2007UB01 Phys.Rev. C 75, 035801 (2007)

E.Uberseder, M.Heil, Fr.Kappeler, J.Gorres, M.Wiescher

New measurements of the $^{19}\text{F}(n, \gamma)^{20}\text{F}$ cross section and their implications for the stellar reaction rate

NUCLEAR REACTIONS $^{19}\text{F}(n, \gamma)$, E=spectrum; measured E_γ , I_γ , Maxwellian averaged σ . Astrophysical implications discussed.

doi: 10.1103/PhysRevC.75.035801

Data from this article have been entered in the EXFOR database. For more information, access X4 dataset22968.





NSR Query Results

Publication year range : 1910 to 2011
 Primary and secondary references.
 Experimental quantity required.

Output year order : Descending
 Format : Normal

NSR database version of December 17, 2010.

Search : Nuclide = ¹⁹F and Reaction = (N,G)

Request #4651
 Results: Entries: 1 Subentries: 3 DataSets: 3 DataLines: 13

Data Selection

Data: Selected Unselected All

Output: EXFOR Text EXFOR+ Bibliography TAB C4 PlotC4

Plot: Quick plot Advanced plot [how-to] Convert ratios (if any) to cross sections using [IAEA-standards,2006]

Advanced data modifications

	n	Acc#	lst	Author	Year	Reference
1)	01	22968	2007	E.Uberseder+		J, PR/C, 75, 035801, 2007
						Jour. Physical Review, Part C, Nuclear Physics, Vol.75, p.035801 (2007)
<input checked="" type="checkbox"/>	1	22968001	Info	X4	X4+	general information
<input checked="" type="checkbox"/>	2	229680024	Info	X4	X4+	T4 Pt:1
<input checked="" type="checkbox"/>	3	229680023	Info	X4	X4+	T4 Pt:1
<input checked="" type="checkbox"/>	4	229680022	Info	X4	X4+	T4 Pt:1
<input checked="" type="checkbox"/>	5	229680025	Info	X4	X4+	T4 Pt:1
<input checked="" type="checkbox"/>	6	229680021	Info	X4	X4+	T4 Pt:1
<input checked="" type="checkbox"/>	7	22968003	Info	X4	X4+	T4 Pt:1
<input checked="" type="checkbox"/>	8	22968004	Info	X4	X4+	T4 Pt:11

01 = Show Summary (with code explanation, links to dependent data, etc.)

T4 = Show Tabulated Dataset (for Cross Section only)

R = Reaction-code expansion

Page generated: 2010/12/20,08:53:30 by X4-Servlet on www.nndc.bnl.gov
 Project: "Multi-platform EXFOR-CINDA-ENDF", V.Zerkin, IAEA-NDS, 1999-2010
 Request from: 130.199.112.67

New measurements of the ¹⁹F(n, γ)²⁰F cross section and their implications for the stellar reaction rate

NUCLEAR REACTIONS ¹⁹F(n, γ), E=spectrum; measured E_γ, I_γ, Maxwellian averaged σ. Astrophysical implications discussed.

doi: 10.1103/PhysRevC.75.035801

Data from this article have been entered in the EXFOR database. For more information, access X4 dataset22968.



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NSR & NUCLEAR PHYSICS

- ❖ We published NSR Reference article in Nuclear Instruments & Methods (first NSR journal paper)
- ❖ We finished historical physics articles NSR update, over 200 impact papers on nuclear structure, astrophysics & neutron physics were added to NSR (With help from McMaster U.)
- ❖ NSR paper range was extended from 1911 to 1896
- ❖ Educational value of NSR

NSR & NUCLEAR PHYSICS

The screenshot shows a web browser window titled "Nuclear Science References (NSR)" with the URL "www.nndc.bnl.gov/nsr/". The page header includes the "National Nuclear Data Center" logo and the "BROOKHAVEN NATIONAL LABORATORY" logo. A navigation bar lists "NNDc Databases: NuDat | NSR | XUNDL | ENSDF | MIRD | ENDF | CSISRS | Sigma". The main heading is "Nuclear Science References (NSR)" with a sub-heading "NSR Reference Paper NIM A 640, 213 (2011)" and "Database version of November 10, 2011". A paragraph describes the NSR database as a bibliography of nuclear physics articles. Below this is a search interface with tabs for "Quick Search", "Text Search", "Indexed Search", "Keynumber Search", "Combine View", and "Recent References". The search form includes fields for "Author" (with "E.Rutherford" entered), "Nuclide" (with "31Na or ca-38" entered), and "Reaction" (with "n,g or (n,g) or (16O,16O)" entered). It also has "Publication Year" fields set to "1901" and "Reference Type" radio buttons for "All", "Experiment", and "Theory". The "Output Format" has radio buttons for "HTML", "BibTex", and "Text". "Search" and "Reset" buttons are at the bottom of the form. Footer text credits the Database Manager, Web Programming, and Data Source.

Nuclear Science References (NSR)
NSR Reference Paper NIM A 640, 213 (2011)
Database version of November 10, 2011

The NSR database is a bibliography of nuclear physics articles, indexed according to content and spanning more than 100 years of research. Over 80 journals are checked on a regular basis for articles to be included. For more information, see the [help page](#). The NSR database schema and Web applications have undergone some [recent changes](#). This is a revised version of the NSR Web Interface.

Quick Search | Text Search | Indexed Search | Keynumber Search | Combine View | Recent References

Author
Brown or B.A.Brown

Nuclide
31Na or ca-38

Reaction
n,g or (n,g) or (16O,16O)

Publication Year from to

Reference Type All Experiment Theory

Output Format HTML BibTex Text

Database Manager: Boris Pritychenko, NNDc, Brookhaven National Laboratory
Web Programming: Boris Pritychenko, NNDc, Brookhaven National Laboratory
Data Source: NNDc, Brookhaven National Laboratory,
NDS, International Atomic Energy Agency,
NDG, McMaster University

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NSR & NUCLEAR PHYSICS

The screenshot shows a web browser window titled "Nuclear Science References (NSR)" with the URL www.nndc.bnl.gov/nsr/fastsrch_act.jsp. The page header includes the NNDc logo, "National Nuclear Data Center", and the Brookhaven National Laboratory logo. A navigation bar lists databases: NuDat, NSR, XUNDL, ENSDF, MIRD, ENDF, CSISRS, and Sigma. The main content area is titled "NSR Query Results" and displays the following information:

- Publication year range : 1901 to 1901
- Primary and secondary references.
- Output year order : Descending
- Format : Normal
- NSR database version of November 10, 2011.
- Search : Author = E.Rutherford
- Found 1 matches, compare with [Google Scholar](#).
- [Back to query form](#)
- 1901RU01** Nature(London) 64, 157 (1901)
- [E.Rutherford](#)
- Emanations from Radio-active Substances*
- doi: [10.1038/064157a0](https://doi.org/10.1038/064157a0)
- [Back to query form](#)

NSR

Nuclear Science Reference

NNDG National Nuclear Data Center

www.nndc.gov

NSR Query Results

Publication year range: Primary and secondary

Output year order: Format: Normal

NSR database version

Search: Author = E

Found 1 matches, click to view details

[Back to query form](#)

1901RU01 Nature

[E. Rutherford](#)

Emanations from Radio-active Substances

doi: 10.1038/0641

[Back to query form](#)

Getting Started Latest Headlines Customize Links National Nuclear Data ...

Collaborate Sign Find

Emanations from Radio-active Substances

In a recent number of the *Louvettes reviews* of the Paris Academy (March 25) an account appeared by MM. P. Curie and A. Debierne of the production of a radio-active gas from radium. In their experiments some radium was placed in a glass vessel and the air exhausted by means of a mercury pump. It was found that the vacuum steadily decreased, due to the giving off of a gaseous substance from the radium. A small amount of the gas thus collected was found to be strongly radio-active. It caused phosphorescence in the glass tubes over which it passed, and in course of time blackened them. Substances exposed in the gas became themselves temporarily radio-active.

Some time ago (*Phil. Mag.*, January and February 1900) I showed that thorium compounds continuously emitted radio-

slide was opened, and the radio-active emanation passed into the other half of the cylinder. The reaction in each half of the cylinder after any interval observing the current through the gas, when a voltage was applied, by means of an electrometer, carried by the gaseous ions which are continuous the radiation from the emanation. From the coefficient of inter-diffusion of the emanation atmospheric pressure and temperature can be determined. The experiments are, however, complicated by radio-activity on the electrodes, which must be considered.

So far as the observations have gone up to the coefficient of diffusion of the emanation into air is between 0.10 and 0.15, and probably nearer the latter coefficients of inter-diffusion of some known gases.

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158 NATURE [JUNE

into air have been determined. The following examples have been taken from Landolt and Bernstein's tables:—

Gas or Vapour.	Coefficient of Diffusion into Air.	Molecular Weight.
Water vapour ...	0.198 ...	18
Carbonic acid gas ...	0.142 ...	44
Alcohol ...	0.101 ...	46
Ether ...	0.077 ...	74

In the above we see that the coefficients of diffusion follow the inverse order of the molecular weights. In cases of the simpler gases it has been shown experimentally that the coefficient of inter-diffusion is approximately inversely proportional to the square roots of the product of the molecular weights. If we apply these considerations to the emanations we see that it is a gas or a vapour of molecular weight (allowing a wide margin) probably lying between 40 and 100. These numbers exclude the possibility of the substance being a vapour of radium, for it has already been shown by M. and Mme. Curie that the atomic weight of radium is greater than that of barium.

We must, therefore, conclude that the emanation is in reality a heavy radio-active vapour or gas.

On account of the rapid decay of the radiating power of thorium emanations it is not possible to determine its coefficients of diffusion in the same way; but special experiments show that it diffuses rapidly, and is also probably gaseous in character. The physical properties of these emanations or gases are most remarkable. The radium emanation not only continues for long intervals to be a source of radiation which is apparently similar in character to easily absorbed Röntgen rays, but in some way manufactures from itself a positively charged substance, which travels to the negative electrode and becomes a source of secondary radio-activity.

Space is too short to enter into the interesting question of the possible explanation of these complicated phenomena.

McGill University, Montreal, May 20. E. RUTHERFORD.

There is no doubt that the peculiarity is to be hereditary, but extreme length of feather can be produced without the special treatment. They were bred in England, and I have seen specimens bred in America (and also hackles) longer than those bred, but so far as I know no specimens bred in America produced the extraordinary length of feather. I have seen specimens in the hall of the Natural History Museum to me reasonable to conclude that the hereditary character is the artificial iteration applied to a long successive generation. J. T. ...

Variation in a Bee.

On September 24, some years ago, I collected in New Mexico, four examples of a wild bee of the species being probably identical with *E. Cresson*. In every one of these specimens the sub-cubital nerve is incomplete, its lower half being on one or both sides. In one example only is the plate on both sides; in the other three it is on the right side only. Such aberrations are not common among bees, but they usually occur in single examples; the best instance known to me of their being common to a number of individuals. What is here clearly a fair way to become a racial character, and we have a good example of Bateson's "discontinuous variation." In the genus *Halictus* certain species have only two instead of the usual three, and the same is true of other species. These peculiar species are related to different genera to which they belong, so that if it is possible to determine them as pertaining to distinct subgenera (for the sake of their variation, it becomes necessary to propose generic names instead of one, because of the evolution of the species. That this evolution is the perpetuation of sports such as that described

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GOOGLE SCHOLAR

- ❖ NSR provides coverage for a large number of journals (>80), however, **it is not a complete product**
- ❖ To improve the coverage and **ensure that nothing is missing** direct links to Google Scholar are produced for “Quick Search” retrievals
- ❖ This will lead to discovery of additional references and further improvements of NSR

GOOGLE SCHOLAR



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Nuclear Science References (NSR) - Mozilla Firefox
http://www2.nndc.bnl.gov/nsr/

National Nuclear Data Center
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NSR | XUNDL | ENSDF | MIRD | ENDF | CSISRS | Sigma

Nuclear Science References (NSR)

Web Integration of NSR and EXFOR Databases
Database version of March 1, 2011

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Quick Search | Text Search | Indexed Search | Keyword Search | Combine View | Recent References

Author: Mughebgheb
Nuclide: 157gd
Reaction:
Publication Year: from 2000 to 2011
Reference Type: All Experiment Theory
Output Format: HTML BibTex Text

Search Reset

Database Manager: Boris Prigodinski, NNDC, Brookhaven National Laboratory
Web Programming: Boris Prigodinski, NNDC, Brookhaven National Laboratory
Data Source: NNDC, Brookhaven National Laboratory,
IAEA, International Atomic Energy Agency,
ANL, Argonne University

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The screenshot shows a Google Scholar search interface. The search bar contains the text "157Gd author:Mughabghab" and is highlighted with a red box. Below the search bar, there are options to search only in Physics, Astronomy, and Planetary Science, or in all subject areas. The search results are displayed in a list format, with the first result being "Neutron Cross Section Evaluations of Fission Products Below the Fast Energy Region" by J. Chang and S. Mughabghab, published in 2000. Other results include "Evaluation of neutron cross sections for a complete set of Dy isotopes" and "Preliminary Nu-bar Covariances for 238,242 Pu and 242,244,245 Cm". The interface also shows a sidebar with "NSR Query" and "NSR database" options.

CONCLUSION & OUTLOOK

- ❖ NSR provides a very valuable service to nuclear physics community
- ❖ It is a collaborative product of three nuclear data centers that have own area of responsibilities
- ❖ We will try to increase our capabilities & user base by developing new applications such as BibTex link manager: <http://www.nndc.bnl.gov/nsr/bibtexlink?2001PR01>, targeting nuclear reaction community, etc.
- ❖ Future collaboration with Physical Review C