Miten tutkija hakee tietoa?

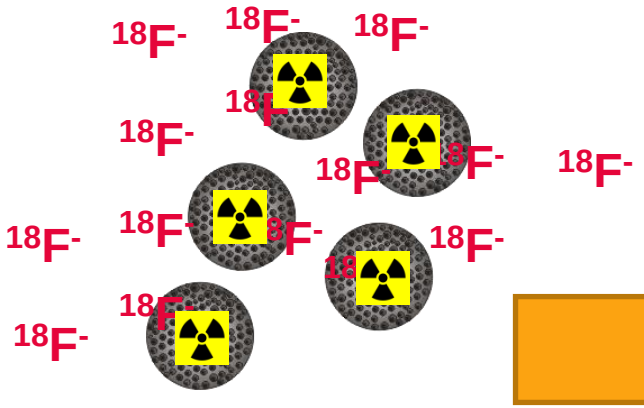
Esimerkkinä radiokemian tohtorikoulutettava

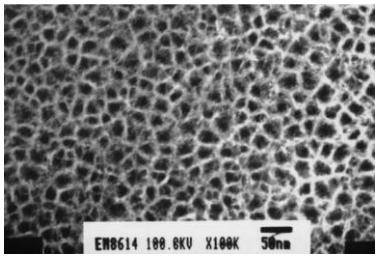
Mirkka Sarparanta
Helsingin yliopisto, Kemian laitos
Radiokemian laboratorio
25.11.2011

Lyhyesti omasta ja tutkimukseni taustoista

- **FM 2007, Helsingin yliopisto, Kemian laitos**
  - **Kemian tietolähteet –kurssi (2 op) osana perusopintoja**
- **Radiokemian tohtorikoulutettava 1.3.2007 →**
  - ***Huokoisten piipartikkelien radioleimaus ^{18}F-isotoopilla – merkkiaineiden kehitys ja arviointi rotassa***
- **Työn osajulkaisut ovat valmiit, tällä hetkellä kirjoitan yhteenveto-osaa**
- **Väitökseni suunniteltu ajankohta syyskuussa 2012**

Lyhyesti omasta ja tutkimukseni taustoista

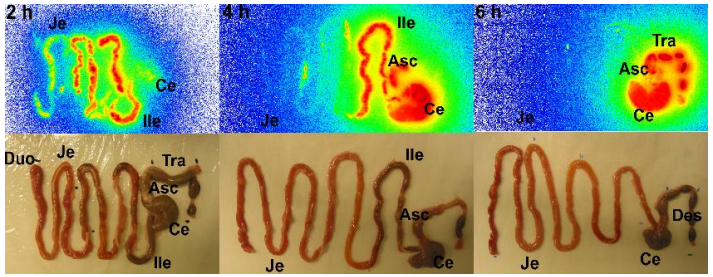




Biojakautuminen?

Immuunireaktiot?

Soveltuvuus lääkeainekuljettimiksi?



ja miksi

Miten tutkija hakee tietoa?

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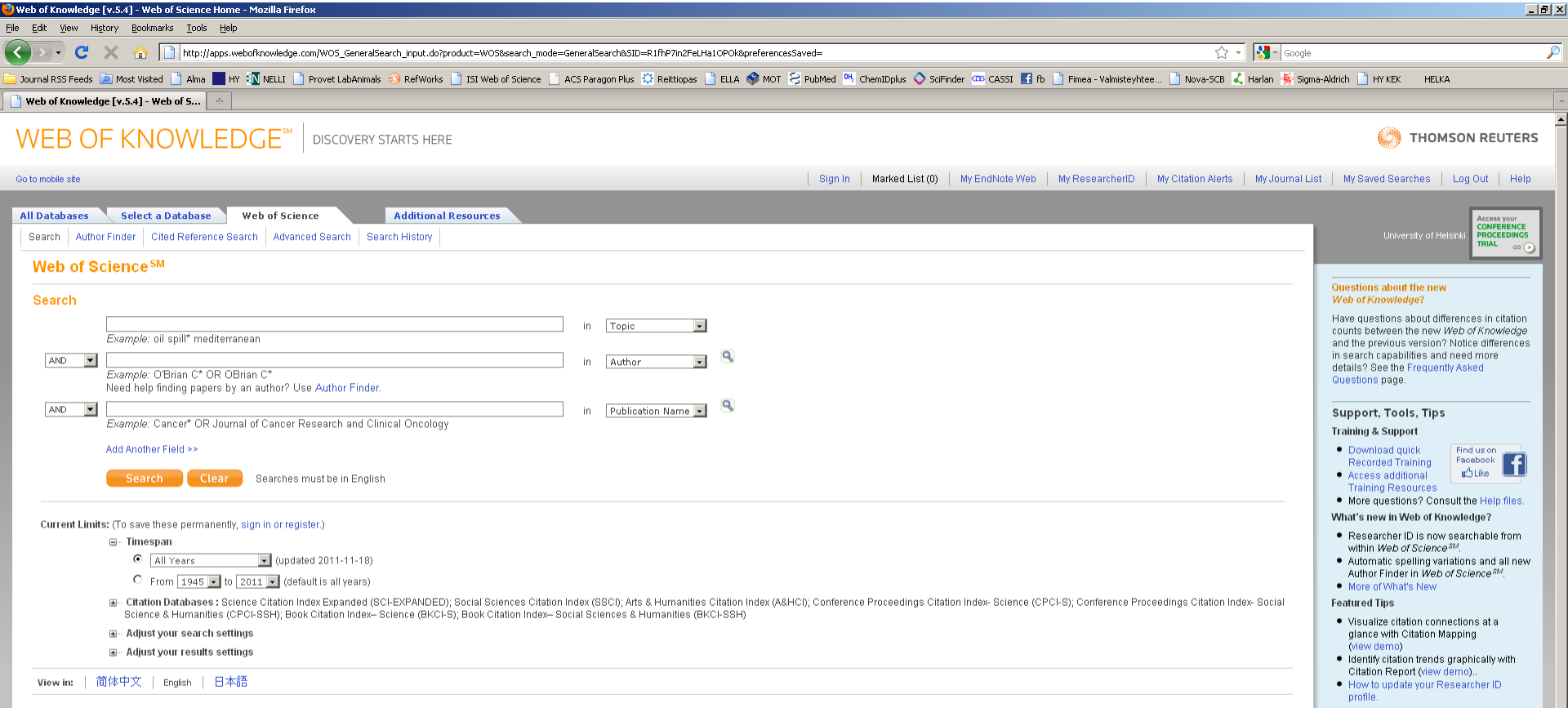
Tietolähteet – yleistä

- **Tiedonhaku pääasiassa sähköisesti**
  - **Kirjallisuusviitteet ja niiden hallinta**
  - **Oman tieteenalan tuoreiden julkaisujen seuranta**
- **Käyttäen HY:n kirjastojen tarjoamia palveluita**
- **Myös valittuja maksuttomia tietokantoja yms. resursseja**

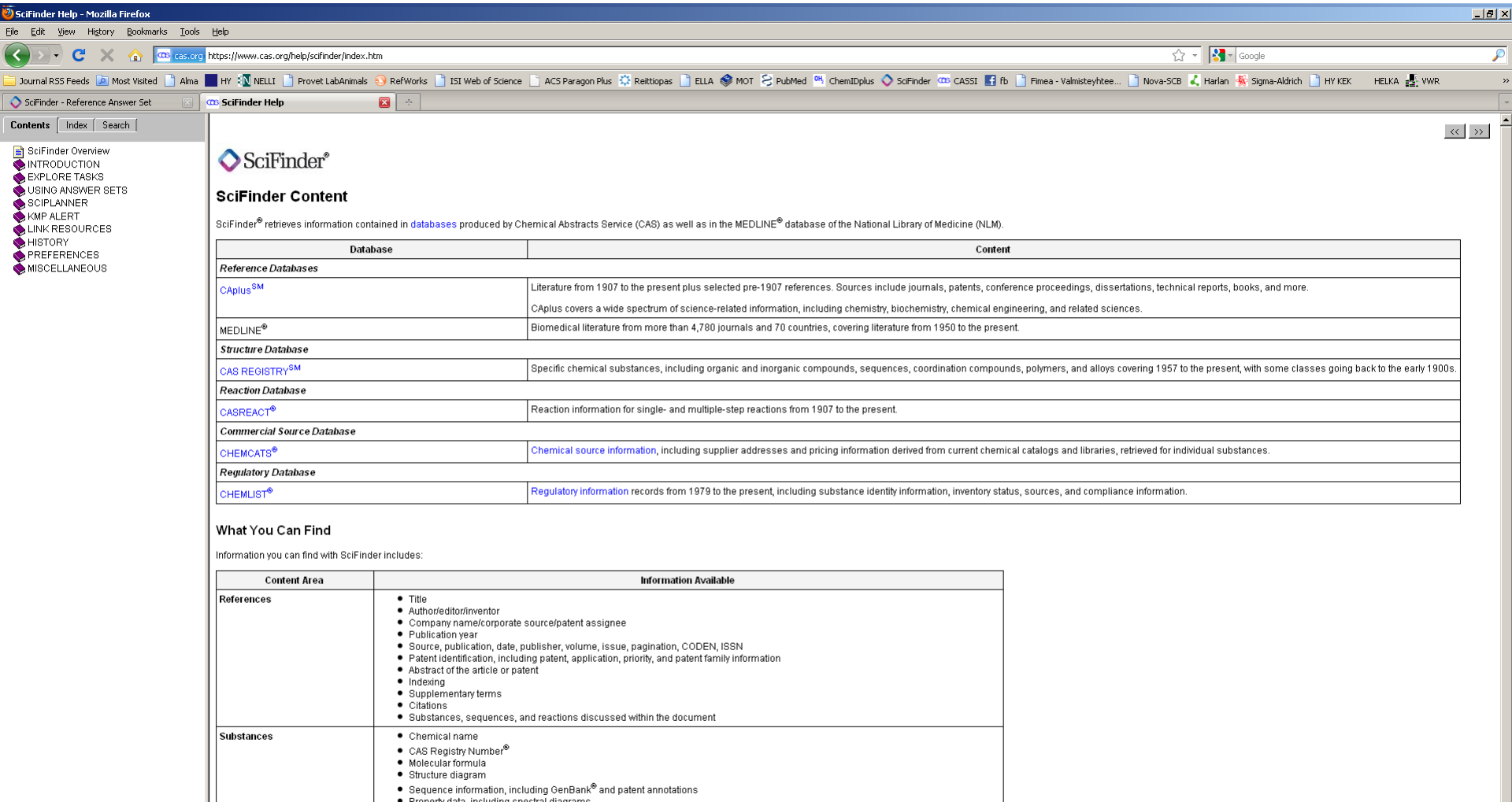
Tietolähteet – Mitä, mistä ja milloin?

Tietolähteet – PubMed ja ISI Web of Knowledge

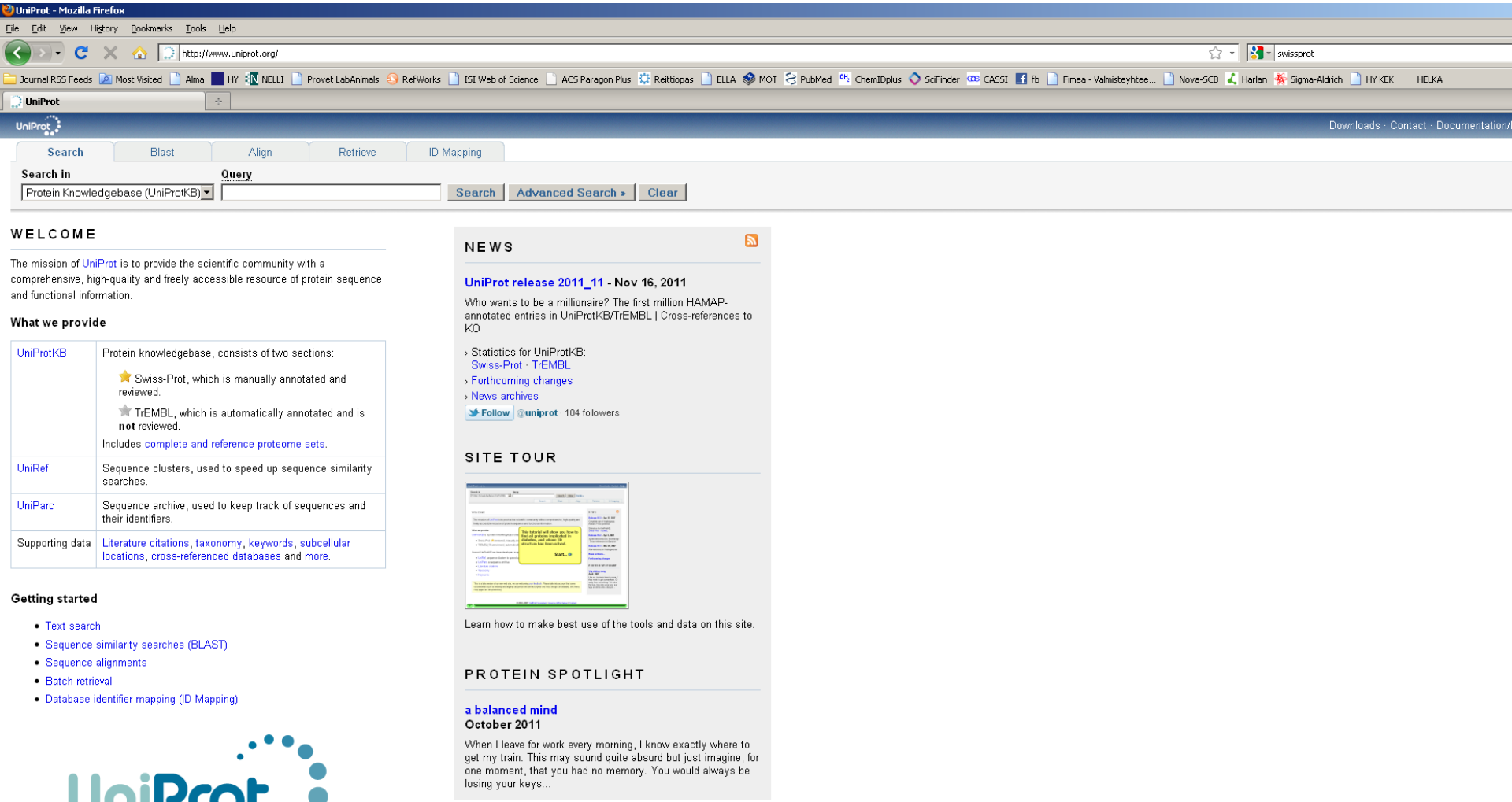
Science Citation Index Expanded (1945-), USA
Social Sciences Citation Index (1956-), USA
Arts & Humanities Citation Index (1975-), USA
Conference Proceedings Citation Index – Science (1990-)
Conference Proceedings Citation Index – Social Science & Humanities (1990-)
Book Citation Index – Science (2005-)



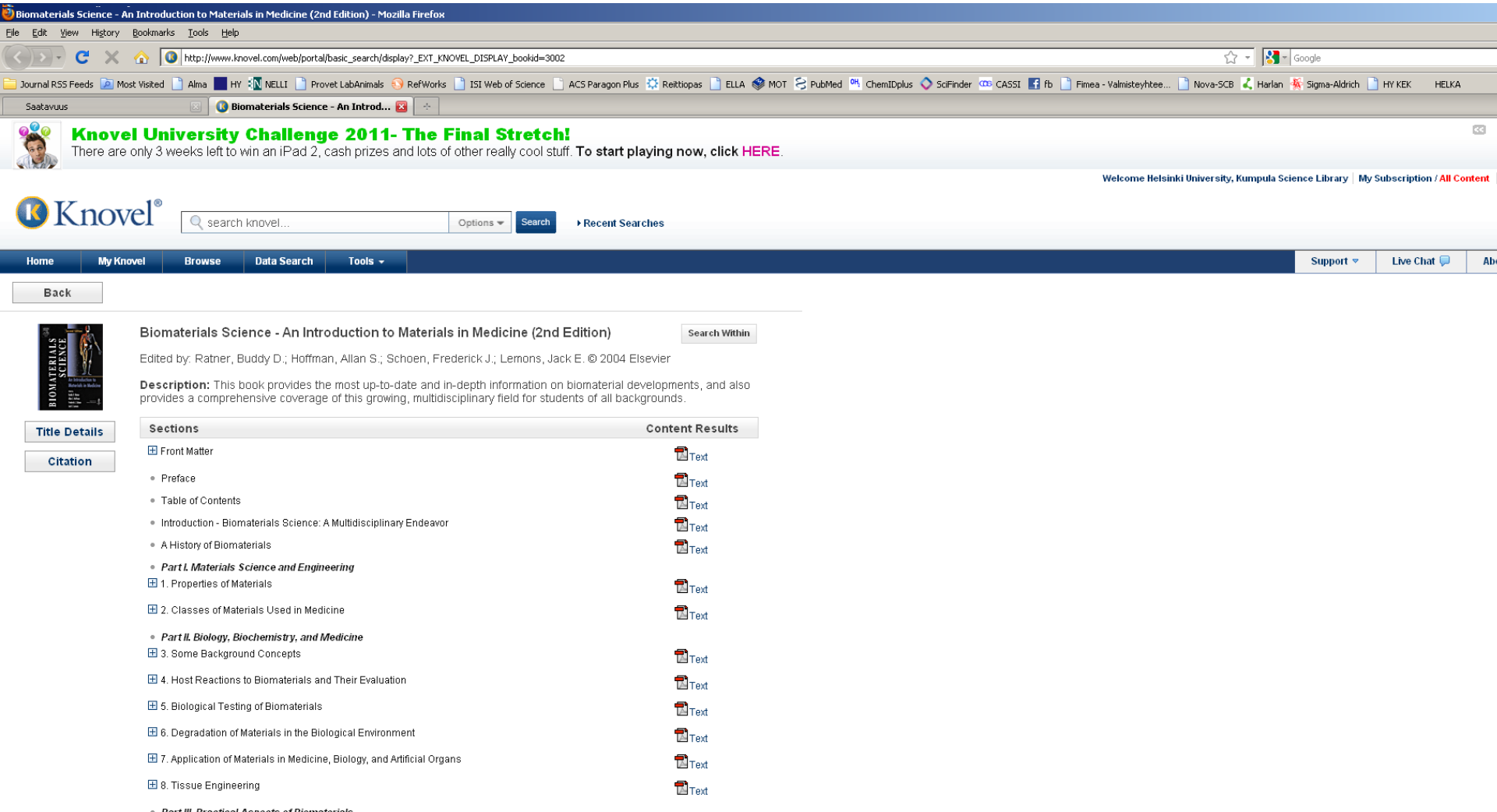
Tietolähteet – SciFinder



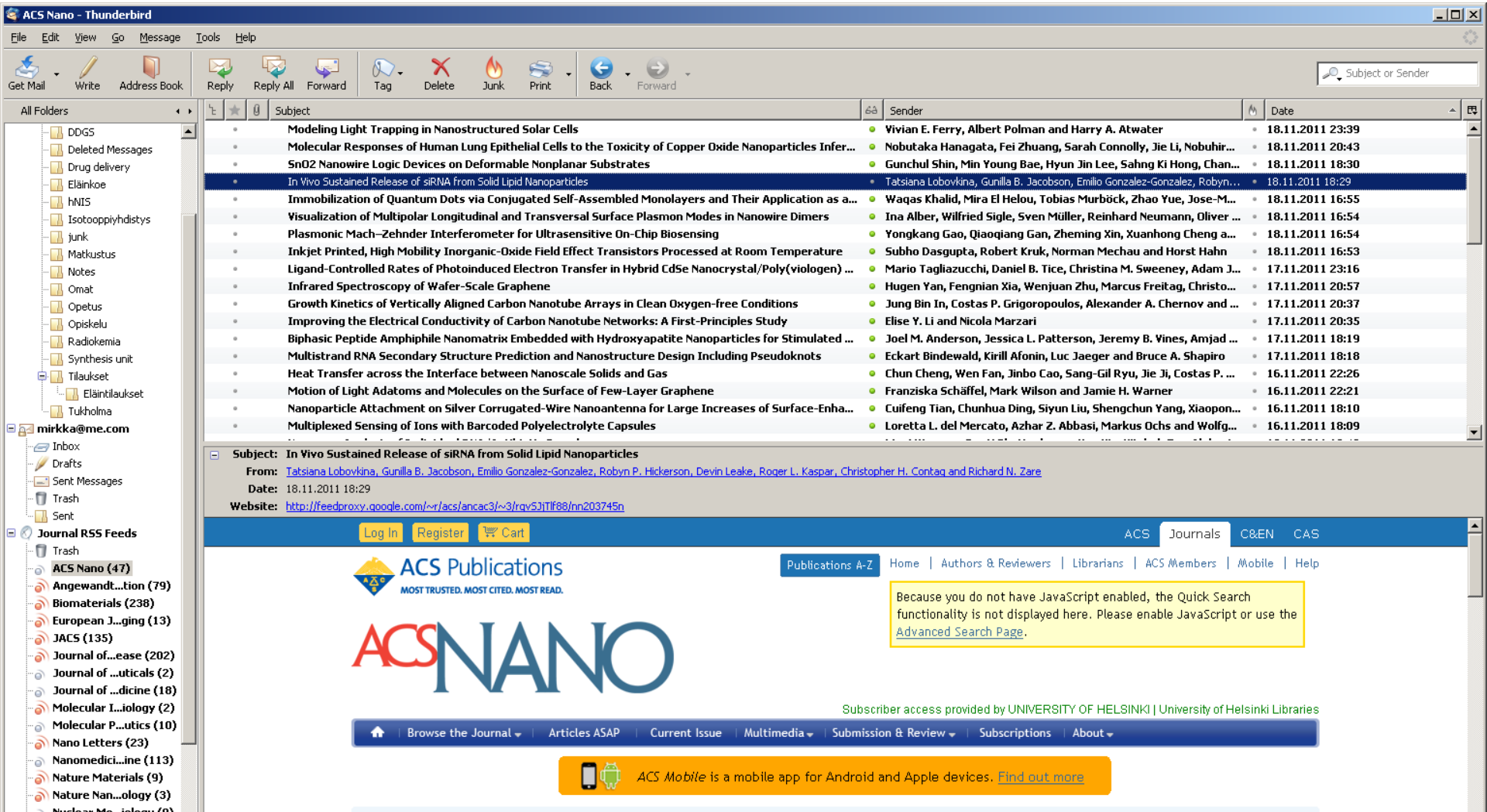
Tietolähteet – muita



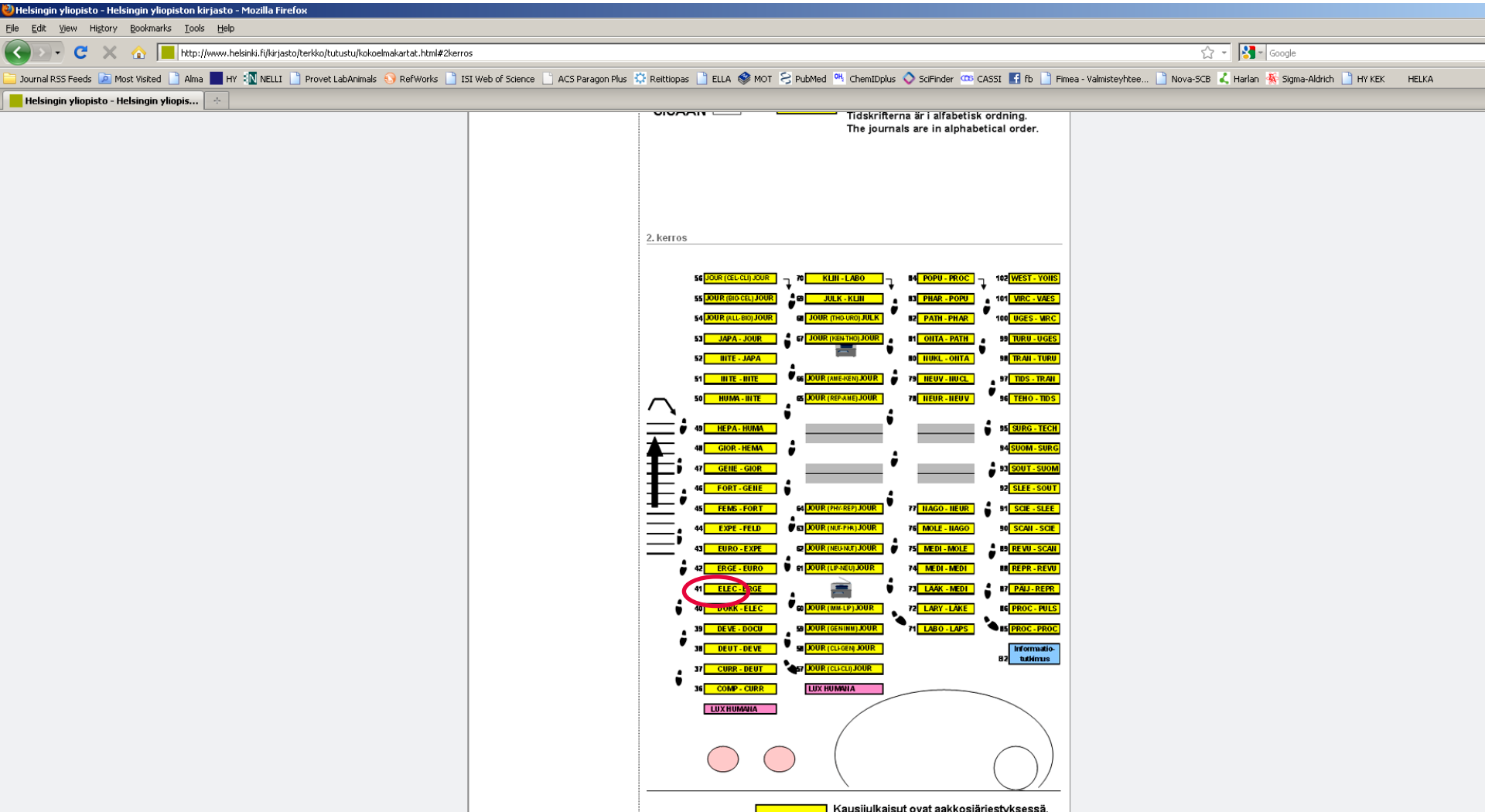
Tietolähteet – Nelli ja Helka



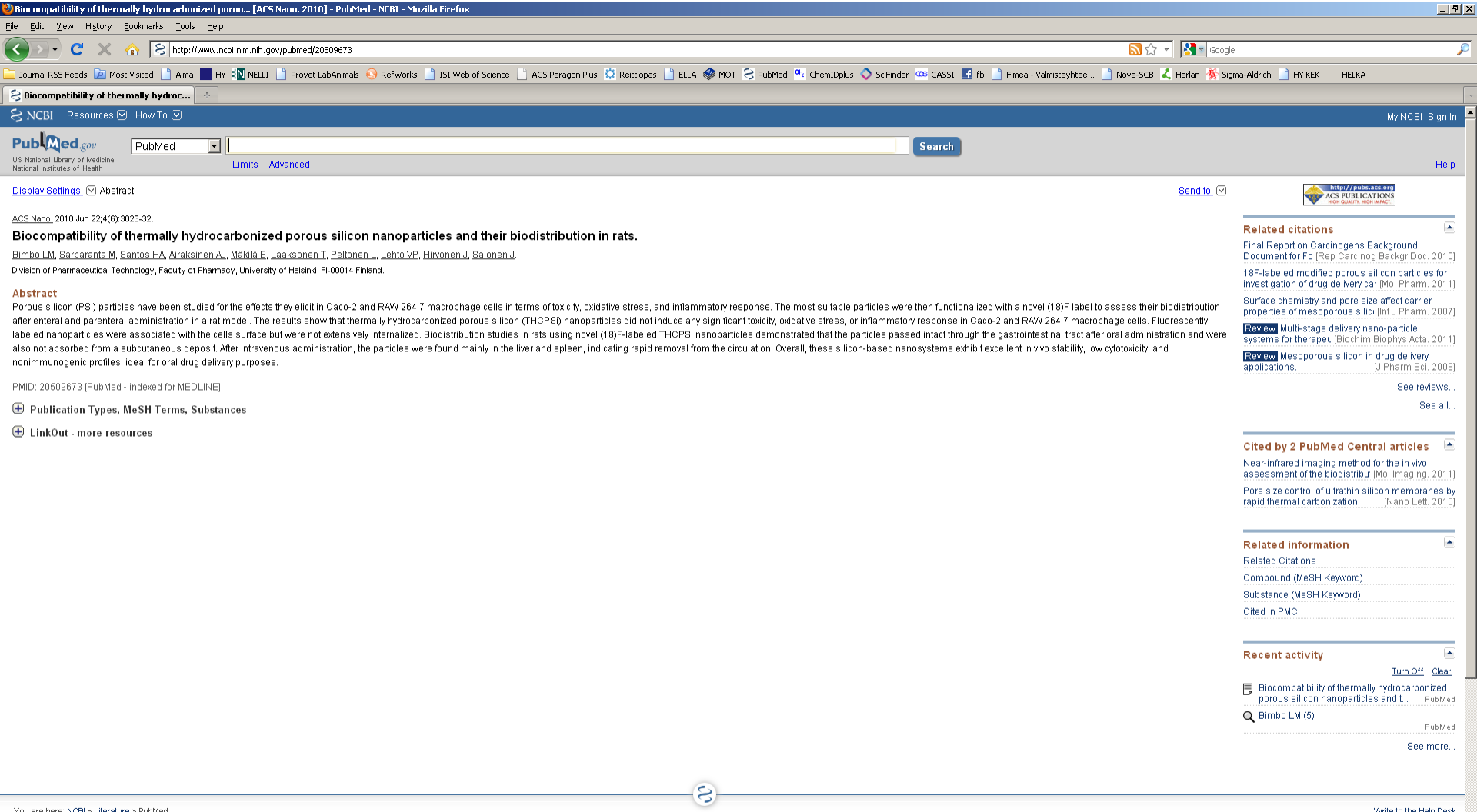
Tietolähteet – Julkaisujen seuranta ja RSS-syötteet



Tietolähteet – Joskus on vain otettava kopiokortti kauniiseen käteen…



Erään haun anatomia…



ARTICLE

Biocompatibility of Thermally Hydrocarbonized Porous Silicon Nanoparticles and their Biodistribution in Rats

Luis M. Bimbo,[†,∥] Mirkka Sarparanta,[‡,∥] Hélder A. Santos,[†,*] Anu J. Airaksinen,[‡] Ermei Mäkilä,[§] Timo Laaksonen,[†] Leena Peltonen,[†] Vesa-Pekka Lehto,[⊥] Jouni Hirvonen,[†] and Jarno Salonen[§,*]

[†]Division of Pharmaceutical Technology, Faculty of Pharmacy, University of Helsinki, FI-00014 Finland, [‡]Laboratory of Radiochemistry, Department of Chemistry, University of Helsinki, FI-00014 Finland, [§]Laboratory of Industrial Physics, Department of Physics, University of Turku, FI-20014 Finland, and [⊥]Department of Physics, University of Kuopio, FI-70211 Kuopio, Finland. [∥] These authors contributed equally to this work.

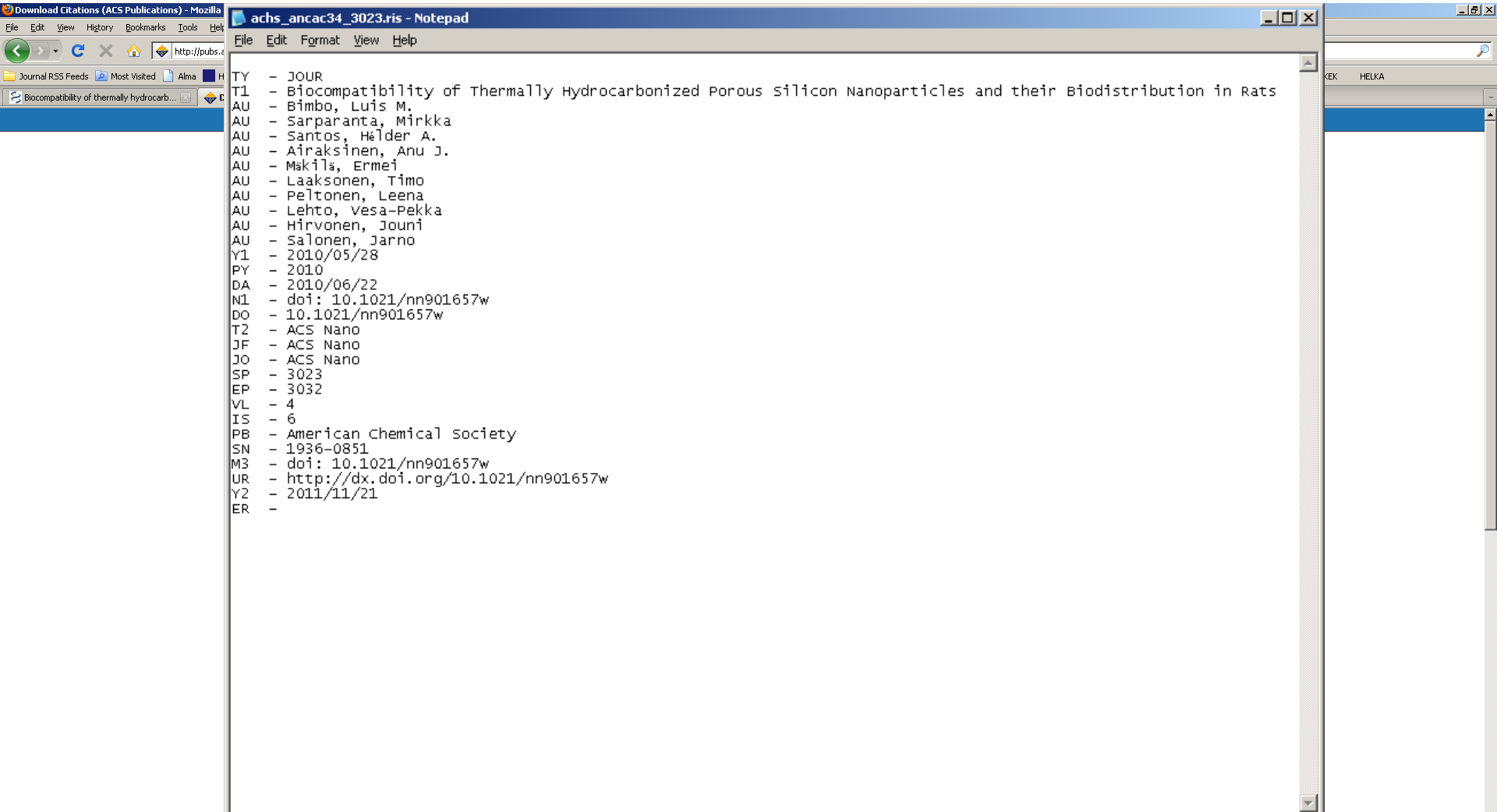
ABSTRACT Porous silicon (PSi) particles have been studied for the effects they elicit in Caco-2 and RAW 264.7 macrophage cells in terms of toxicity, oxidative stress, and inflammatory response. The most suitable particles were then functionalized with a novel ^{18}F label to assess their biodistribution after enteral and parenteral administration in a rat model. The results show that thermally hydrocarbonized porous silicon (THCPSi) nanoparticles did not induce any significant toxicity, oxidative stress, or inflammatory response in Caco-2 and RAW 264.7 macrophage cells. Fluorescently labeled nanoparticles were associated with the cells surface but were not extensively internalized. Biodistribution studies in rats using novel ^{18}F-labeled THCPSi nanoparticles demonstrated that the particles passed intact through the gastrointestinal tract after oral administration and were also not absorbed from a subcutaneous deposit. After intravenous administration, the particles were found mainly in the liver and spleen, indicating rapid removal from the circulation. Overall, these silicon-based nanosystems exhibit excellent *in vivo* stability, low cytotoxicity, and nonimmunogenic profiles, ideal for oral drug delivery purposes.

KEYWORDS: porous silicon · nanoparticles · oral delivery · cytotoxicity · biodistribution · Caco-2 cells

Since the first evidence of the biocompatibility of porous silicon (PSi),[1] there have been a growing number of publications about its numerous applications.[2−4] While most of the research has been focused on microdevices for therapeutic use,[5] chemical and biological sensors,[6] and optoelectronics,[7] other applications have also emerged, such as intravenous[8] and ocular drug delivery.[9,10] Oral delivery still remains the route preferred by patients and thus dominates controlled release research.[11] Drug and peptide delivery by PSi particles has already been demonstrated and with promising results.[12,13] PSi particles can be loaded with diverse payloads, such as small molecule drugs and peptides. In addition, improved solubility of poorly soluble drugs after loading has been reported.[14−16] The silicon surface can be treated in the gas phase by oxidation, hydrosilylation, and thermal carbonization,[3] or it can also be grafted with numerous

benefits in the development of drug delivery carriers can be achieved.[8] It is known that silicon-based nanomaterials can de-

Viite…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AU - Sarparanta, Mirkka
AU - Santos, Hélder A.
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AU - Hirvonen, Jouni
AU - Salonen, Jarno
Y1 - 2010/05/28
PY - 2010
DA - 2010/06/22
N1 - doi: 10.1021/nn901657w
DO - 10.1021/nn901657w
T2 - ACS Nano
JF - ACS Nano
JO - ACS Nano
SP - 3023
EP - 3032
VL - 4
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PB - American Chemical Society
SN - 1936-0851
M3 - doi: 10.1021/nn901657w
UR - http://dx.doi.org/10.1021/nn901657w
Y2 - 2011/11/21
ER -
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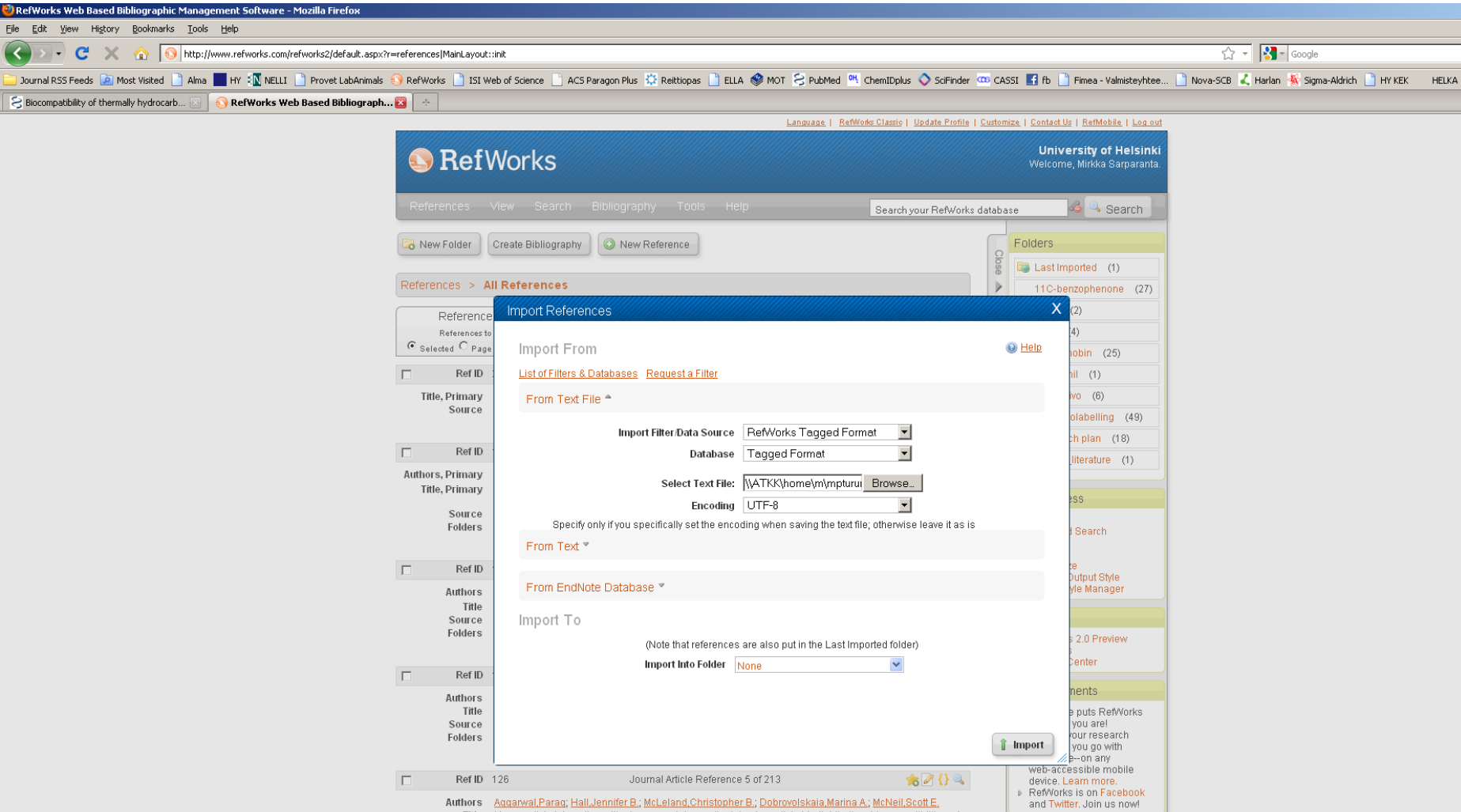
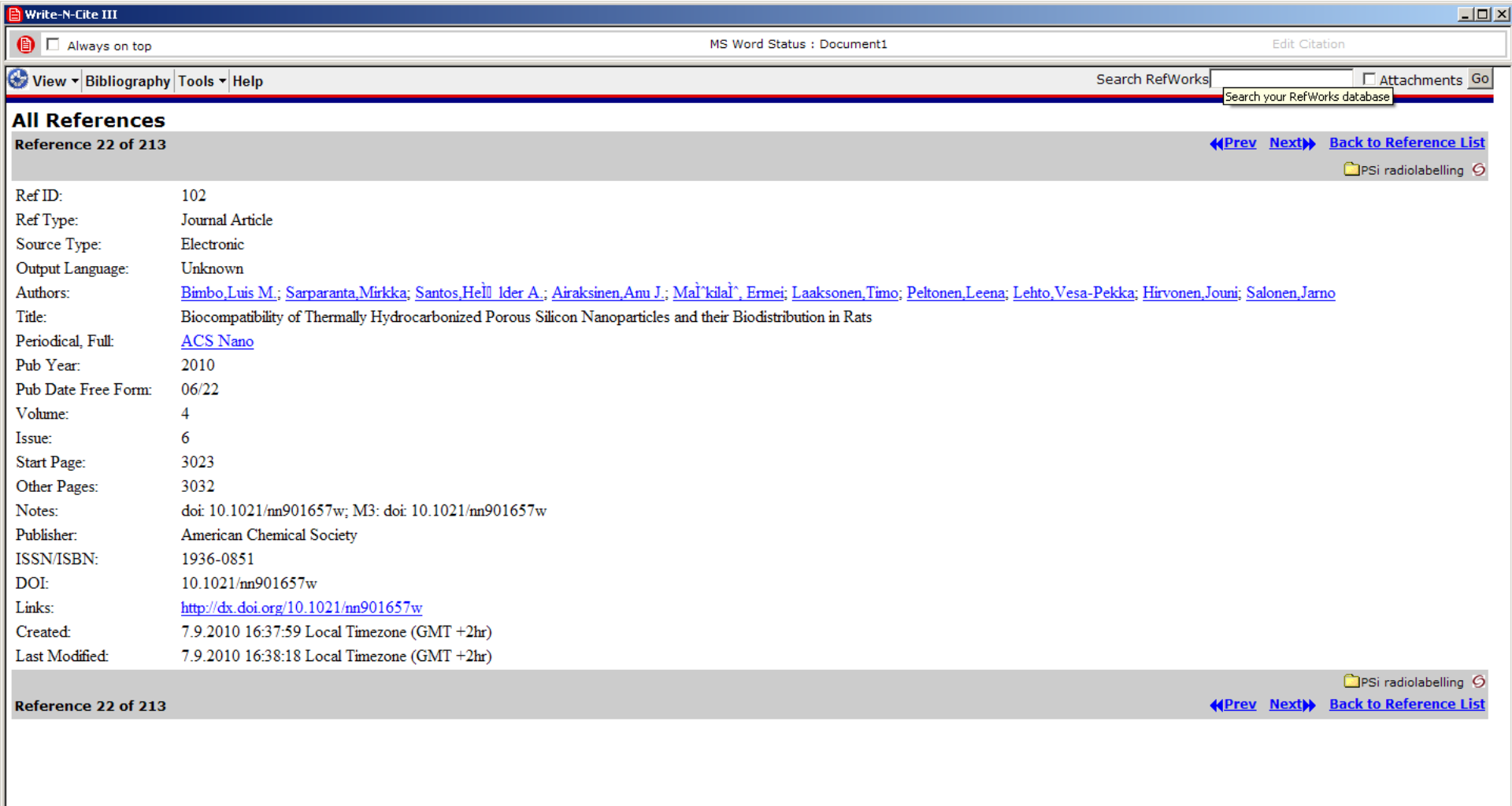
Tuonti RefWorksiin…



Voilá!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Source Type: Electronic
Output Language: Unknown
Authors: Bimbo,Luis M.; Sarparanta,Mirkka; Santos,Hel Ider A.; Airaksinen,Anu J.; Mal kila , Ermei; Laaksonen,Timo; Peltonen,Leena; Lehto,Vesa-Pekka; Hirvonen,Jouni; Salonen,Jarno
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MOT
SciFinder
Kokoelmat
ISI Web of Science

- **Tiedonhankinta keskeistä tohtorikoulutettavan työssä – useita lähteitä!**
- **Eniten käyttöä elektronisilla kirjastopalveluilla, unohtamatta ilmaisia palveluita**
- **Kemistin näkökulmasta HY:n kirjastopalvelut erinomaisia tehokkaan ja tuloksellisen tiedonhaun kannalta**

Kiitos!