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Effects of Model, Method of Collection, and Topography on Chemical Elements and Metals in the Aerosol of Tank-Style Electronic Cigarettes

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Our purpose was to examine the effect of model, puffing topography (voltage, air-flow, puff interval), and method of collection on 19 elements/metals in aerosols from six tank-style electronic cigarettes (EC). Aerosols were collected from six brands using a cold trap or impinger and various puffing topographies. 19 elements were quantified using inductively coupled plasma optical emission spectroscopy. 16 elements/metals were present and quantified in the aerosols. The total concentrations of elements/metals ranged from 43 to 3,138 µg/L with the impinger method of collection and 226 to 6,767 µg/L with the cold trap method. The concentrations of individual elements were often similar across brands and across topographies. Some elements (e.g., zinc) were present in most aerosols, while others (e.g., cadmium, titanium, vanadium) were rarely found. Concentrations of some elements (e.g., lead) increased in aerosols as voltage/power increased. The model with fewest metal parts in the atomizer had the fewest metals in its aerosols. Most elements/metals in the aerosols have been found previously in the atomizers of EC. All tank-style aerosols had elements/metals that appeared to originate in the atomizers, and concentrations increased with increasing power. Concentrations of some elements were high enough to be a health concern.

Chem 370

Scientific Writing

reports | what's the difference?

Technical Reports vs. Lab Notebooks

The **lab notebook** is a (legal) **record**. It contains **all exact details** about the experiment.

A **technical report** is a detailed, but curated, **narrative** about the project. It generally omits exact details to focus on the overall "story".

Note that curating information is not the same thing as omitting data! You cannot leave out data simply because they don't support the story you *want* to tell.

reports | what's the difference?

Technical Reports vs. Lab Notebooks

Five standards were prepared by serial dilution using a 1000 mg/L acetaminophen stock in 1:3 methanol:water. ACS-grade Acetaminophen was obtained from Fisher Scientific. The methanol and water used were HPLC grade and were obtained from AlfaAsaer.

vs.

Standards were prepared by serial dilution using a 1002.5 mg/L acetaminophen (Fisher Scientific Lot #123XYZ) stock solution in 1:3 methanol water. The methanol and water used were HPLC grade and were obtained from AlfaAsaer (Lot # 12345678 and 12348910, respectively).

1. A high standard was prepared by pipetting 5.00 ml of the stock into a 25.0 ml volumetric flask and diluting to volume with the MeOH/H20 solution.
2. A med-hi std was prepared by pipetting 15.00 ml of the high standard into a clean 25.0 ml vol flask and diluting
3. A med std was prepared by pipetting ....

reports | the writing process

Prewriting: Define audience & scope

Drafting: Lit review, outlining, bullet lists, rough writing (keep momentum!)

Revising: Each team member should read the manuscript for overall content

Editing: Each team member should copyedit for grammar, spelling, etc.

Evaluating: Peer-review

Publishing: Publishing

reports | what to write

Use the **IMRAD** format.
(**I**ntro, **m**ethods, **r**esults **a**nd **d**iscussion, conclusions)

Your report should be a professional-quality document that tells the complete story of your analysis.

Write it as if it's intended for a scientific audience outside WCU.

See https://chem370.github.io/course-information/technical-reports for more info (including template).

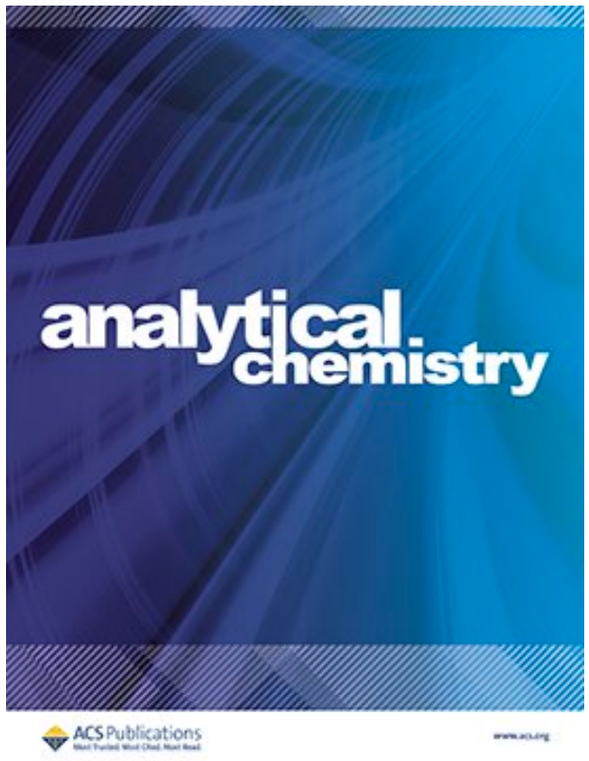
Preliminary title, Introduction, and at least half of methods section due week of March 31 (day before Easter holiday).

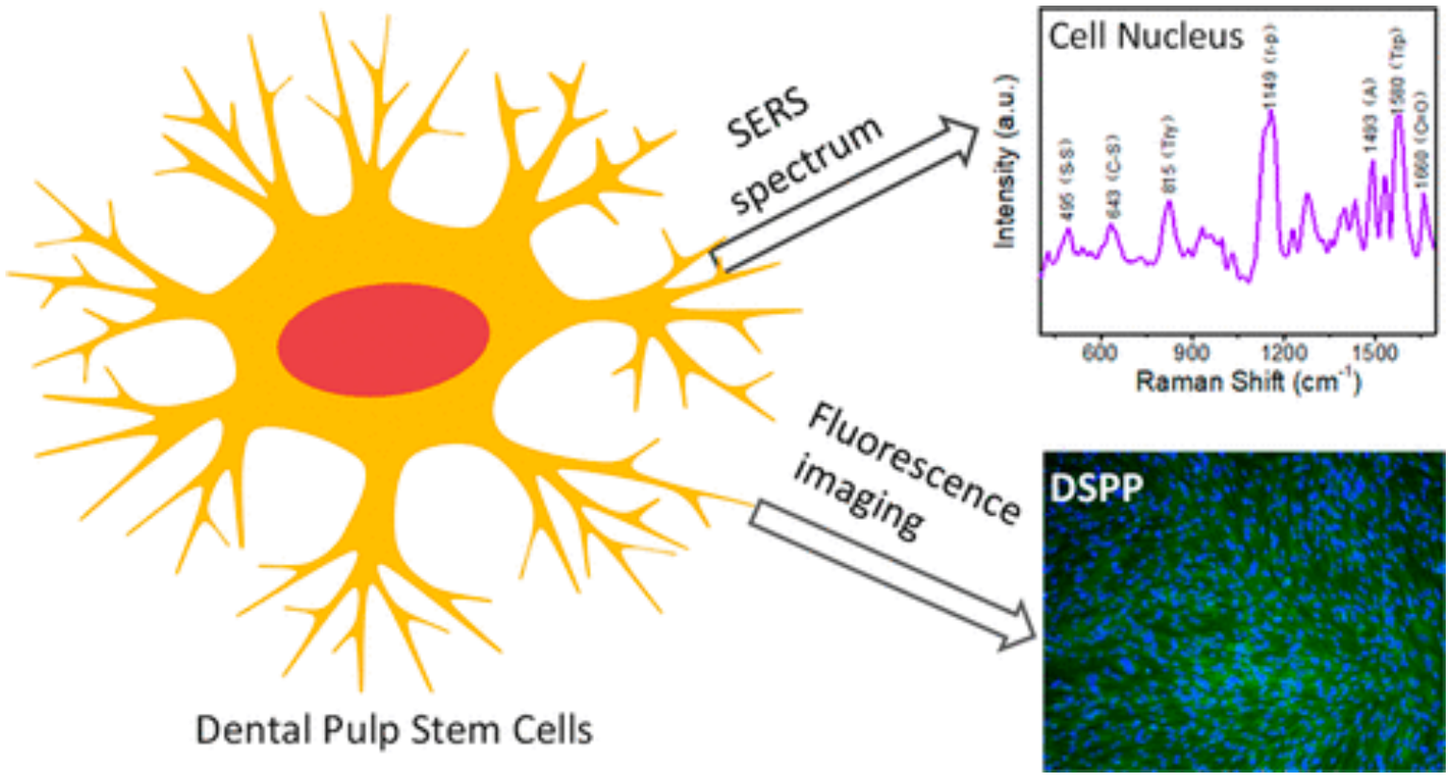
titles | **descriptive** title

Aim for 15 words or less in a title (not a hard limit).

Molecular Profiling of Dental Pulp Stem Cells during Cell Differentiation by Surface Enhanced Raman Spectroscopy

Jiafeng Wang, Guohua Qi, Xiaozhang Qu, Xiaoxu Ling, Zhimin Zhang* and Yongdong Jin*

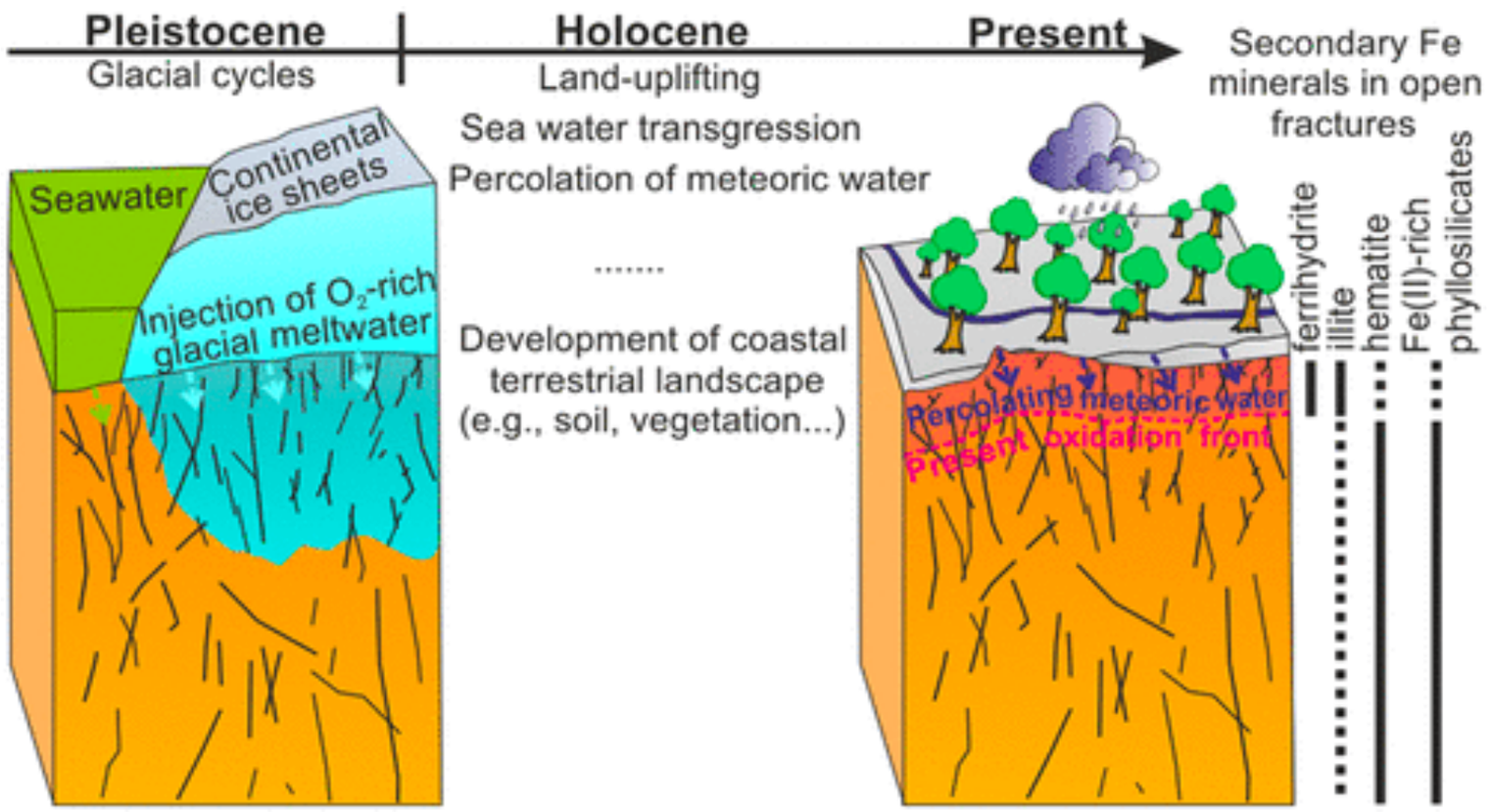




titles | **descriptive** title

A Combined X-ray Absorption and Mössbauer Spectroscopy Study on Fe Valence and Secondary Mineralogy in Granitoid Fracture Networks: Implications for Geological Disposal of Spent Nuclear Fuels

Changxun Yu*, Henrik Drake, Knud Dideriksen, Mikael Tillberg, Zhaoliang Song, Steen Mørup and Mats. E. Åström

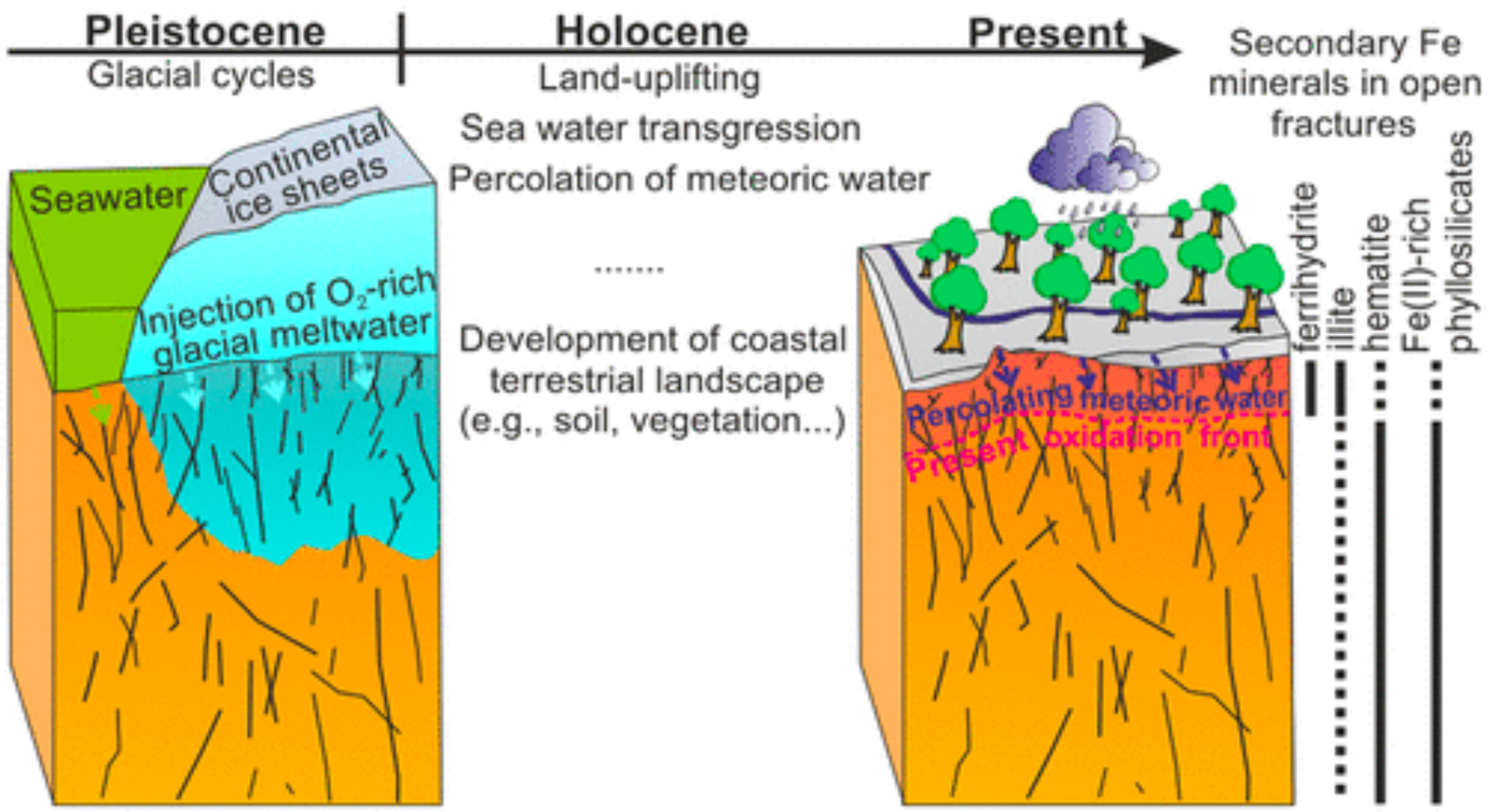


titles | **descriptive** title

Avoid wordy, complex, and/or overly descriptive titles.

A Combined X-ray Absorption and Mössbauer Spectroscopy Study on Fe Valence and Secondary Mineralogy in Granitoid Fracture Networks: Implications for Geological Disposal of Spent Nuclear Fuels

Changxun Yu*, Henrik Drake, Knud Dideriksen, Mikael Tillberg, Zhaoliang Song, Steen Mørup and Mats. E. Åström



titles | **declarative** title

Declarative titles are OK, but not as common in chemistry.

The NEW ENGLAND JOURNAL of MEDICINE

Vitamin E Acetate in Bronchoalveolar-Lavage Fluid Associated with EVALI

Benjamin C. Blount, Ph.D., Mateusz P. Karwowski, M.D., M.P.H., Peter G. Shields, M.D., Maria Morel-Espinosa, Ph.D., Liza Valentin-Blasini, Ph.D., Michael Gardner, M.S., Martha Braselton, B.S., Christina R. Brosius, M.P.H., Kevin T. Caron, B.S., David Chambers, Ph.D., Joseph Corstvet, B.S., Elizabeth Cowan, Ph.D., et al., for the Lung Injury Response Laboratory Working Group*

titles | **interrogative** title

Interrogative titles are OK, but also not common in chemistry.

Can ozone be used to calibrate aerosol photoacoustic spectrometers?

D. Al Fischer[1,*] **and Geoffrey D. Smith**[1]

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[*]current address: Department of Chemistry and Physics, Western Carolina University, 111 Memorial Drive, Cullowhee, NC 28723, USA

Atmos. Meas. Tech., 11, 6419–6427, 2018
https://doi.org/10.5194/amt-11-6419-2018

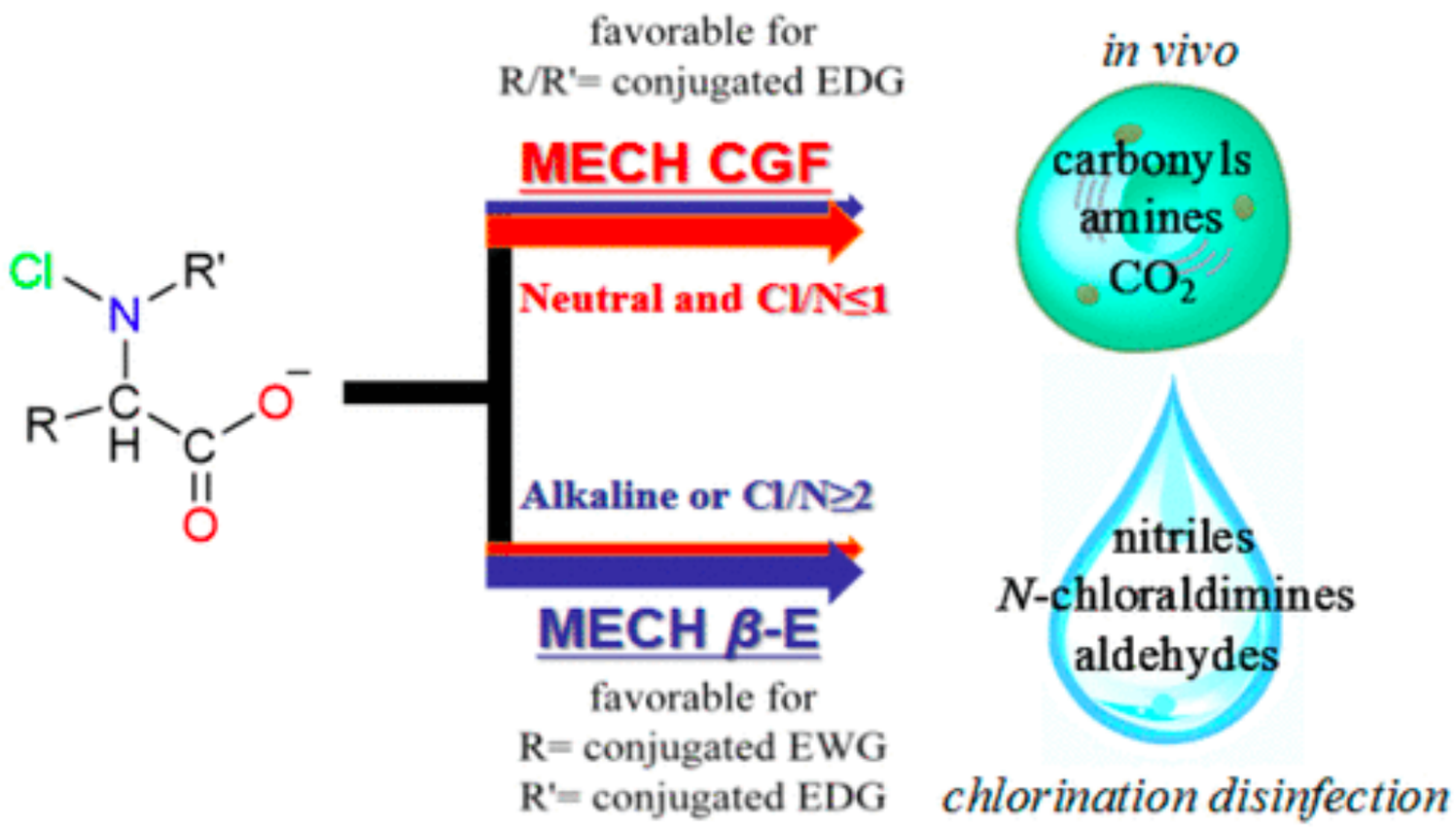
Atmospheric Measurement Techniques
Open Access
EGU

titles | subtitles: controversial

Subtitles: controversial and unnecessary?

Degradation Mechanisms and Substituent Effects of *N*-Chloro-α-Amino Acids: A Computational Study

Huiyuan Zhao, Yingying Zhou, Chunxiu Han, Yong Dong Liu* and Rugang Zhong



titles | chem370 examples

Find the balance between
descriptiveness and succinctness.

A **Quantitative Analysis of Copper and Sulfate in Multivitamins by FAAS and IC**

B **Multivitamin Analysis**

C **FAAS Measurement**

titles | chem370 examples

Find the balance between
descriptiveness and succinctness.

A **Quantitative Analysis of Copper and Sulfate in Multivitamins by FAAS and IC**

B ~~**Multivitamin Analysis**~~

C ~~**FAAS Measurement**~~

references | scholarly sources

Cite only scholarly sources in your manuscript.
In chemistry, this usually means peer-reviewed journals.

Other suitable sources:

- Curated academic books
- Government reports
- Specification sheets published by instrument manufacturers (on topics of instrument design).
- Personal communication with instrument manufacturers or engineers (on topics of instrument design).

NOT Scholarly:

- Websites (unless they list instrument specs).
- Lab handouts

If you don't know how to find scholarly sources ask your instructor or a librarian for help!

writing intros & methods

See

https://chem370.github.io/course-information/technical-reports

and relevant subsections, as well as template and rubric.