SPWLA Houston Chapter Newsletter

We hope everyone engages and participates in our exciting 2021 events!

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Upcoming Events

Virtual Seminar: April 29, 2021

Formation Chlorine Measurement from Spectroscopy Enables Water Salinity Interpretation, by Jeffrey Miles (Schlumberger-Doll Research Center).

Virtual Seminar: May 26, 2021

Introduction to Machine Learning and its Applications to Petrophysics, by Andrew McDonald (Lloyd's Register).

Stay tuned!

President's Corner

Dear members of the Houston Chapter,

First, our SPWLA Houston Chapter board is pleased to share that we were supporting the 8th Semi-Annual Upstream Oil and Gas Professionals Hiring Event in collaboration with SPE. The event was a success with more than 400 participants registered and 33 companies/employers in attendance. We will continue supporting these types of initiatives that add a great value to our members, especially during these times via partnership with other professional societies and local chapters such as the SPE GCS. With vaccinations now fully available for everyone in Texas, the landscape looks promising and oil prices are an indication of that with more job postings available compared to six months ago and more companies participating in these networking events.

We would like to invite you to attend our virtual seminar in April 29th. We are hosting the SPWLA Distinguished Speaker 2020-2021 Jeffrey Miles, who will be presenting his work about formation chlorine measurement from spectroscopy and how it can be used for water salinity interpretation. We also want to express our gratitude to SPWLA Distinguished Speaker (DS) Nikita Seleznev for sharing his work in our March seminar.

For those of you that have not realized yet, our website has been completely revamped. It went live in January 2021. Among the main changes, we included new features that will allow us to have a better interaction with our members and manage the chapter. We'd also like to invite you to check out some of the webinars available in our video gallery. Please register in our new website, you will receive notifications of upcoming events and chapter news. There are also several interesting sponsorship opportunities and job postings can be announced there, please contact us in case you are interested. We are open for new speakers in our seminars, we like to bring other guests in addition to our SPWLA DS guests, especially if the topic is of interest for our audience. Contact any board members in case you have a presentation you want to share.

Please stay tuned and check it out for upcoming news! As always feel free to contact any of the board members if you have any questions or comments using our contacts included below.

Kind regards,
Javier Miranda

Javier Miranda
Houston Chapter President
president@spwla-houston.org

Useful links

Sign up for the Houston Chapter Mailing List [Link]

Houston Chapter

SPWLA International

Join SPWLA – become a member

Houston Chapter LinkedIn page

Upcoming Virtual Seminar

FORMATION CHLORINE MEASUREMENT FROM SPECTROSCOPY ENABLES WATER SALINITY INTERPRETATION

Date   : **Wednesday, April 29, 2021**
Time   : **12:00 pm – 1:00 pm (US CDT)**
Admission   : **Free registration using the link below**
                        https://attendee.gotowebinar.com/register/841762327306795788
Contact   : **Hyungjoo Lee (SPWLA Houston Chapter VP Downtown)**
Corresponding   vpdowntown@spwla-houston.org

BIOGRAPHY - SPWLA Distinguished Speaker 2020-21

Jeffrey Miles is a Principal Research Scientist at Schlumberger-Doll Research Center in Cambridge, MA, USA. He received a PhD in physics from the Massachusetts Institute of Technology in 2007. His interests include the modeling and interpretation of all aspects of nuclear physics in the oil field, with emphasis on neutron-induced gamma ray spectroscopy, algorithms for fast modeling and inversion, and augmenting physics with machine learning. He is a co-author on 20+ publications and holds 11 granted patents. Jeff is an officer of the Boston SPWLA chapter and serves as a Distinguished Speaker for the 2020-21 series.

ABSTRACT

The chloride concentration in formation water is critical knowledge for petrophysics, and yet it is a perennial source of uncertainty. Many water saturation calculations depend on knowing the water salinity or chloride concentration. Chlorides have a strong effect on water properties, and they impact saturation estimates that are based on resistivity, dielectric dispersion, or thermal neutron absorption. In this work, we introduce a new, direct, quantitative measurement of formation chlorine from nuclear spectroscopy, which enables continuous logs of apparent water salinity or water volume within a limited radial depth.

The first part of the talk focuses on how we isolate the signal of chlorine from the formation. Neutron-capture spectroscopy is sensitive to chlorine and is a natural fit for measuring its concentration, except that the spectrum contains chlorine from both the formation and borehole. The borehole background can be large and is highly variable. We resolve the borehole and formation chlorine using two unique spectral standards. The contrast between the two standards arises from differences in gamma ray scattering based on the point of origin. The shape of the borehole chlorine standard is adjusted continuously along depth to account for environmentally dependent scattering. The new technique provides a generalized correction for borehole chlorine, which is advantageous in comparison with historical methods that have relied on empirical chlorine offsets or gross ratios of chlorine and hydrogen. We illustrate the new technique with modeling, laboratory data, and core-log comparisons.

The second part of the talk proposes petrophysical workflows to interpret the chlorine concentration. In combination with total porosity, the chlorine concentration sets a minimum value for water salinity. We can add an organic carbon measurement to enable sequential estimates of water volume and salinity. The chlorine log can also be combined with an input water salinity to compute water volume for comparison with other methods. The chlorine concentration enables calculation of a maximum expected Sigma, which can identify the presence of excess thermal absorbers in the matrix. Finally, we will refer to joint inversions between chlorine and resistivity or dielectric dispersion, enabling simultaneous solutions for water volume and salinity which are the subject of other upcoming papers.

Upcoming Virtual Seminar

INTRODUCTION TO MACHINE LEARNING AND ITS APPLICATIONS TO PETROPHYSICS

Date   **: Thursday, May 26, 2021**
Time   **: 11:00 Am – 12:00 pm (US CDT)**
Admission   **: Free registration using the link below**
                      https://attendee.gotowebinar.com/register/2105188049169140492
Contact   **: Bernd Ruehlicke (SPWLA Houston Chapter VP West Side)**
Corresponding   vpwestside@spwla-houston.org

BIOGRAPHY

Andrew McDonald is a Petrophysicist at Lloyd's Register in Aberdeen, UK, and he has over 15 years of industry experience. His primary focus is providing domain expertise to software development projects and applications of machine learning/artificial intelligence to petrophysics. He is also a keen Python developer. Prior to working with Lloyd's Register, he worked as a geoscientist for Baker Hughes where he specialized in log quality control, petrophysics, and acoustic waveform processing and interpretation. Andy holds an MSc in Earth Science from the Open University, and a BSc (Hons) in Geology & Petroleum Geology from the University of Aberdeen. He has co-authored several technical papers for SPWLA and SPE conferences covering machine learning, heavy oil, and low salinity waterflooding.
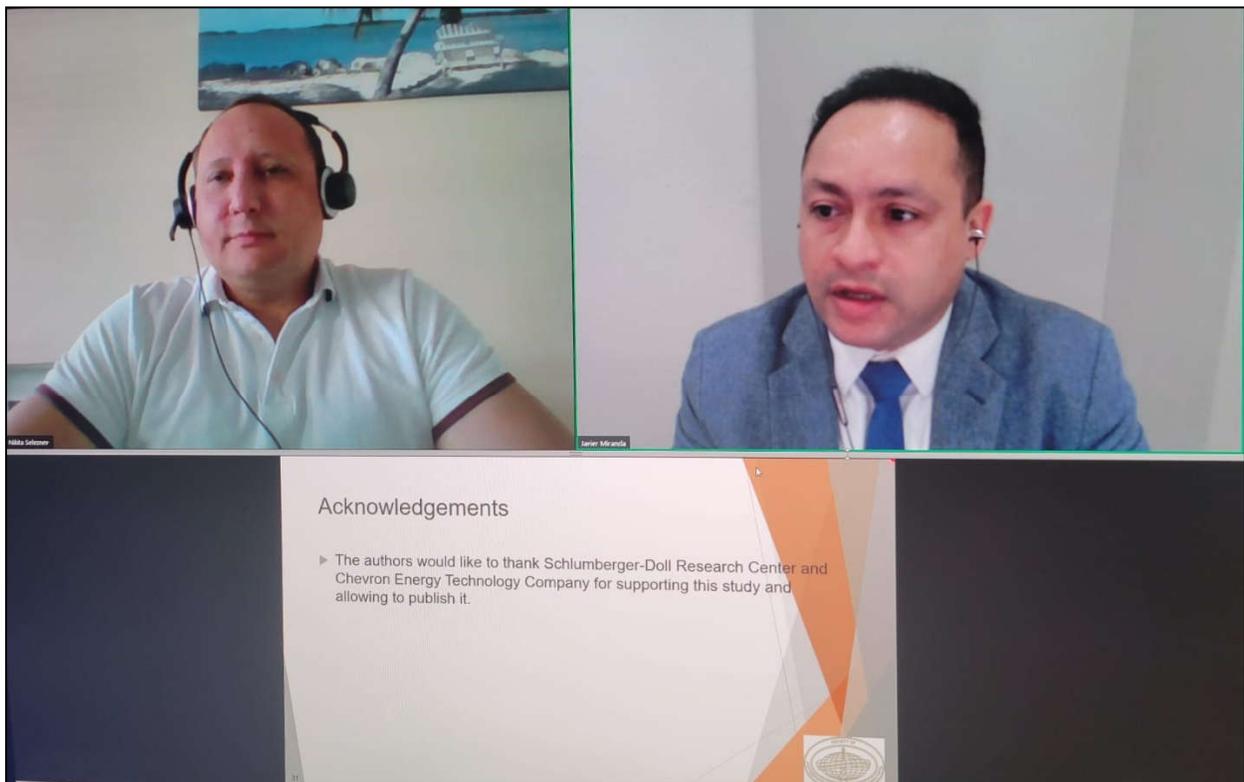
ABSTRACT

An introduction to ML (what is it and what are the categories of it), the general workflow, info on data quality, and then a number of examples either from the literature or from my own Python notebooks & papers.

Recent Events

SPWLA Houston Chapter March virtual seminar

SPWLA Houston Chapter recently organized a virtual seminar with SPWLA Distinguished Speaker (DS) Nikita Seleznev titled "Determining Water-Filled Porosity of Tight Oil Reservoirs with a New Interpretation Method for Dielectric Dispersion Measurements" on March 10th. This seminar was well attended with more than 80% of people registered attending. We thank you Nikita for volunteering to present his work to our chapter members and others from overseas who were interested in the topic. In fact, we had a very dynamic Q&A session where Nikita expanded on the topic and addressed all the questions and comments from the audience.

SPWLA DS Nikita Seleznev (left) and SPWLA Houston Chapter President Javier Miranda (right)

Summary of 8th Semi-Annual Upstream Oil and Gas Professionals Hiring Event

The SPWLA Houston Chapter supported the 8th Semi-Annual Upstream Oil and Gas Professionals Hiring Event for professionals of energy and upstream oil & gas disciplines, which was organized by the SPE-GCS. As a result, SPWLA Houston Chapter current professional members were entitled to participate as job seekers. This hiring event was held online on April 7th with more than 400 participants registered, 33 companies and more than 50 collaborating organizations as shown below. The Hiring Event was one of the most remarkable happenings bringing together experienced and talented professionals with employers and recruiters from various sectors "virtually under one roof", thereby serving as the platform for open and vast-ranging employment opportunities.

The event received great feedback from Texas Workforce Solutions. For the first time ever, the Hiring Event was free for both employers and job seekers.

For more information about the event and participants, visit our website:

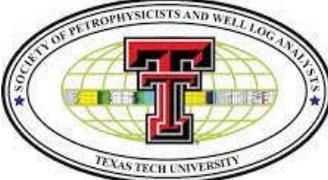**https://www.spwla-houston.org/**

Supporting Student Chapters of SPWLA

The Houston Chapter is proud to continuously provide financial support to regional Student Chapters of SPWLA. The student chapters are an important component of our society as they organize a significant number of technical events to highlight and disseminate petrophysics and formation evaluation knowledge among students, academics, and local professionals. We recently provided financial help to support two chapters in Texas with their student paper contests, monthly seminars and other activities.

The latest recipients include the chapters at:

The University of Texas at Austin (Hook'em!)

Texas Tech University (Guns up!)