



**KAUST VISUALIZATION CORE LAB  
WITH THERMOFISHER SCIENTIFIC**

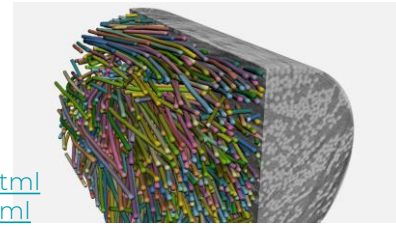
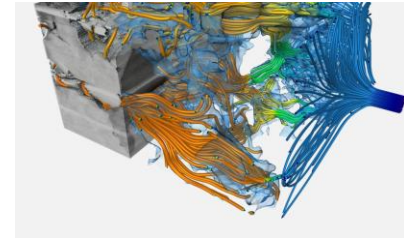
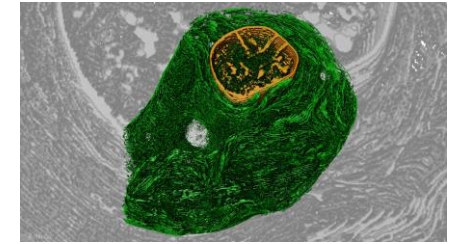
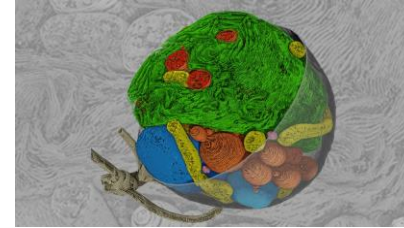
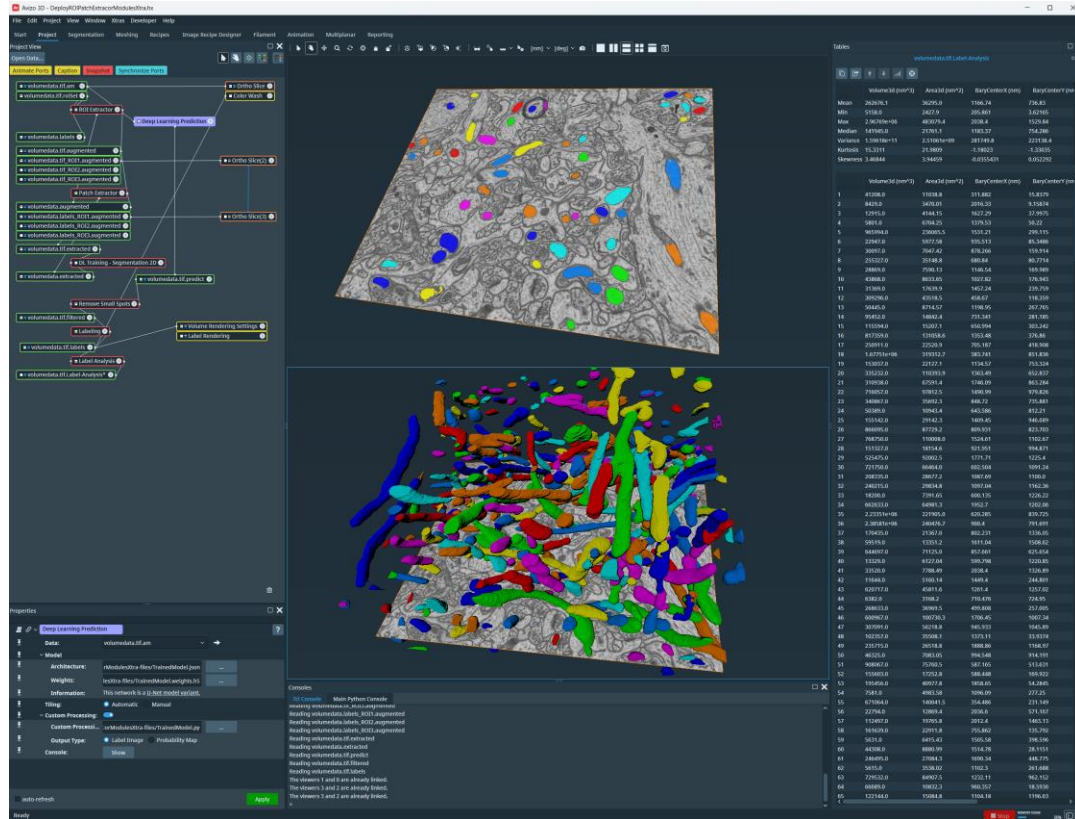
**PRESENT**

# **SCIENTIFIC VISUALIZATION WITH AVIZO**

**OCTOBER 12 – 14, 2026**

**1:30 P.M. – 4:30 P.M.**

# Amira / Avizo Software



<https://it.kaust.edu.sa/software/avizo>

<https://www.thermofisher.com/sa/en/home/electron-microscopy/products/software-em-3d-vis/amira-software/applications.html>  
<https://www.thermofisher.com/sa/en/home/electron-microscopy/products/software-em-3d-vis/avizo-software/applications.html>



# KVL Resources

**Ronell Sicut**

KAUST Visualization Core Lab



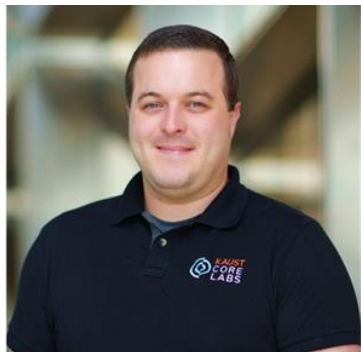
**KAUST**  
VISUALIZATION  
CORE LAB

# KAUST Visualization Core Lab (KVL) provides expertise in data visualization & analysis and data science



Dr. Sohaib Ghani  
(LEAD STAFF SCIENTIST)

- VISUAL ANALYTICS
- INFORMATION VIS
- STATISTICAL ANALYSIS



Dr. James Kress  
HPC SCIVIS

- VISUALIZATION SOFTWARE
- HPC INSITU VISUALIZATION
- DISTRIBUTED VISUALIZATION



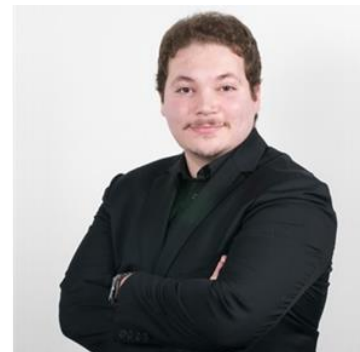
Dr. Ronell Sicat  
SCIVIS, AR/VR

- SCIENTIFIC VISUALIZATION
- SEGMENTATION & 3D ANALYSIS
- AR/VR DEVELOPMENT



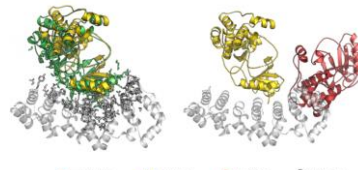
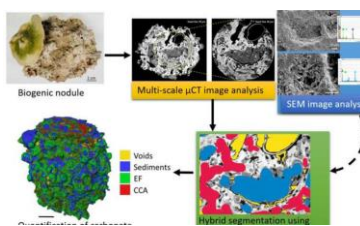
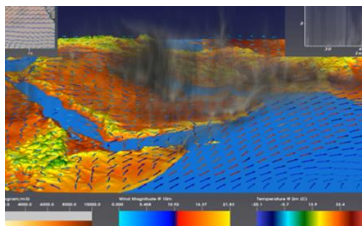
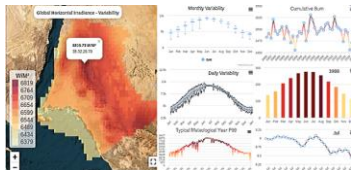
Dr. Didier Barradas  
DATA SCIENTIST

- DATA SCIENCE
- MACHINE LEARNING
- DEEP LEARNING

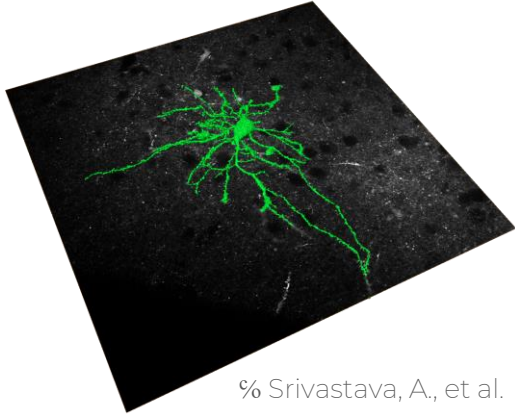


Dr. Abdelghafour Halimi  
DATA SCIENTIST

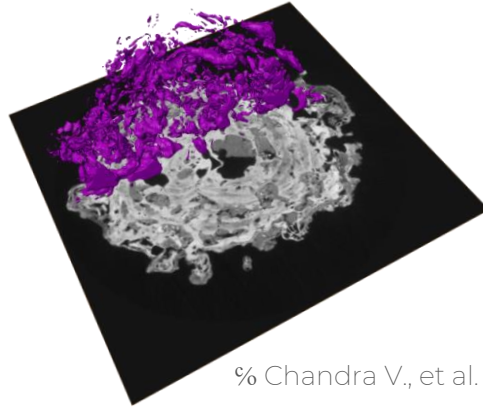
- DATA SCIENCE
- MACHINE LEARNING
- DEEP LEARNING



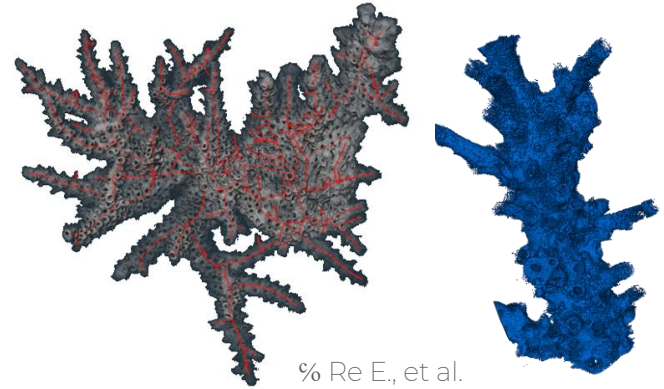
# Ronell: Image Segmentation and 3D Analysis



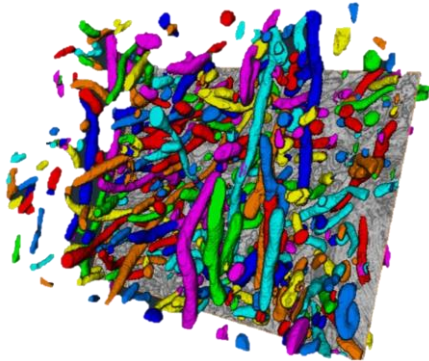
% Srivastava, A., et al.



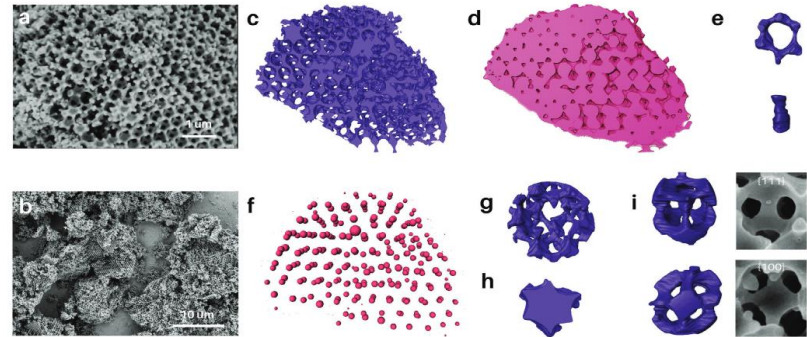
% Chandra V., et al.



% Re E., et al.

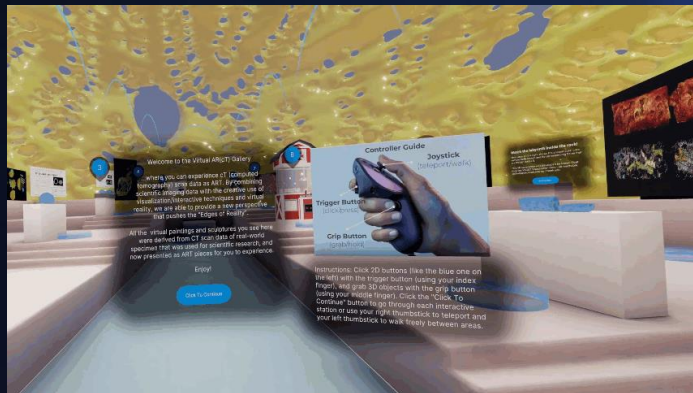
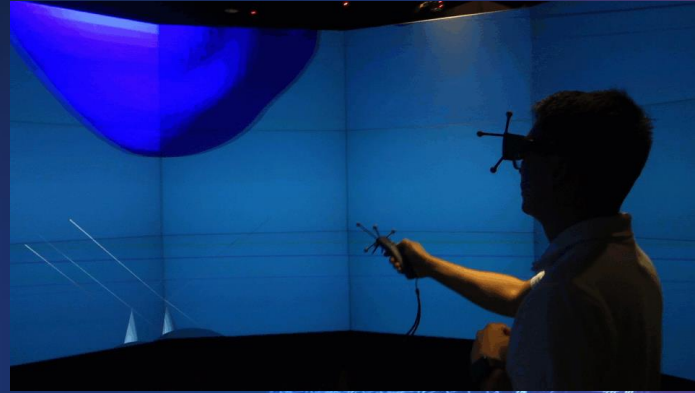
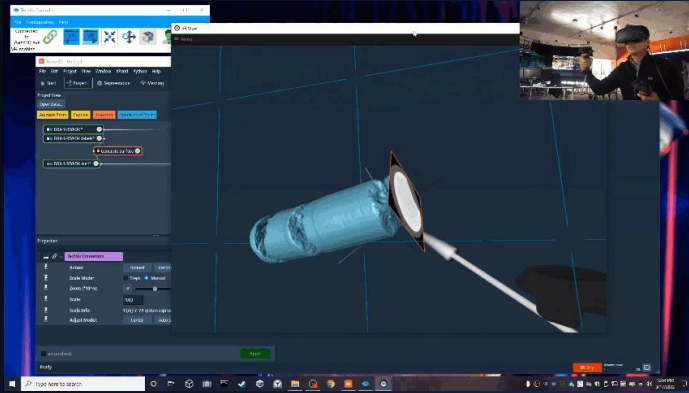


% Lucchi A., et al.



% Poloneeva D., et al.

# Ronell: AR/VR Data Visualization



# We are open to collaboration!



Ronell Sicat

Visualization Scientist @ Visualization Core Lab, King Abdullah University of Science and Technology

Verified email at kaust.edu.sa - Homepage

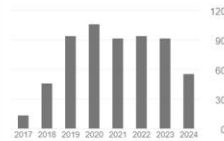
Scientific Visualization Large-scale Images and Videos Augmented/Virtual Reality Segmentation

TITLE CITED BY YEAR

- ☐ A novel multi-scale  $\mu$ CT characterization method to quantify biogenic carbonate production 2024  
V Chandra, R Sicat, F Benzonzi, V Vahrenkamp, V Bracchi  
Geoscience Frontiers 15 (6), 101883
- ☐ Advancing Membrane Technology: Ordered Macroporous ZIF-67 as a Filler in Mixed Matrix Membranes for Enhanced Propylene/Propane Separation 1 2024  
D Poloneeva, SJ Datta, R Sicat, R Khairova, L Garzon-Tovar, A Bavykina, ...  
Small, 2309127
- ☐ Natural variation in salt-induced changes in root: shoot ratio reveals SR3G as a negative regulator of root suberization and salt resilience in Arabidopsis 2024  
MR Ishika, H Sussman, Y Hu, MD Alghamdi, E Craft, R Sicat, M Wang, ...  
bioRxiv, 2024.04.09.588564
- ☐ Multivariate Probabilistic Range Queries for Scalable Interactive 3D Visualization 1 2022  
A Ageeli, A Jaspe-Villanueva, R Sicat, F Mannuss, P Rautek, M Hadwiger  
IEEE Transactions on Visualization and Computer Graphics 29 (1), 646-656
- ☐ Real-Time Visualization of Large-Scale Geological Models With Nonlinear Feature-Preserving Levels of Detail 2 2021  
R Sicat, M Ibrahim, A Ageeli, F Mannuss, P Rautek, M Hadwiger  
IEEE Transactions on Visualization and Computer Graphics 29 (2), 1491-1505
- ☐ Virtual reality framework for editing and exploring medial axis representations of nanometric scale neural structures 11 2020  
D Boges, M Agus, R Sicat, PJ Magistrelli, M Hadwiger, C Cali  
Computers & Graphics 91, 12-24
- ☐ Virtual environment for processing medial axis representations of 3D nanoscale reconstructions of brain cellular structures 2 2019  
D Boges, C Cali, PJ Magistrelli, M Hadwiger, R Sicat, M Agus  
Proceedings of the 26th ACM Symposium on Virtual Reality Software and ...
- ☐ Immersive environment for creating, proofreading, and exploring skeletons of nanometric scale neural structures 3 2019  
D Boges, C Cali, PJ Magistrelli, M Hadwiger, RB Sicat, M Agus  
Eurographics Association
- ☐ DXR: A toolkit for building immersive data visualizations 201 2018  
R Sicat, J Li, J Choi, M Cordeil, WK Jeong, B Bach, H Pfister  
IEEE transactions on visualization and computer graphics 25 (1), 715-725
- ☐ Drawing into the AR-CANVAS: Designing embedded visualizations for augmented reality 51 2017  
B Bach, R Sicat, H Pfister, A Quigley  
Workshop on Immersive Analytics, IEEE Vis 4
- ☐ The hologram in my hand: How effective is interactive exploration of 3D visualizations in immersive tangible augmented reality? 270 2017  
B Bach, R Sicat, J Beyer, M Cordeil, H Pfister  
IEEE transactions on visualization and computer graphics 24 (1), 457-467
- ☐ Comparative Visual Analysis of Structure-Performance Relations in Complex Bulk-Heterojunction Morphologies 7 2017

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**Geoscience Frontiers**

journal homepage: [www.elsevier.com/locate/gsf](http://www.elsevier.com/locate/gsf)

Research Paper

## A novel multi-scale $\mu$ CT characterization method to quantify biogenic carbonate production

V. Chandra<sup>a,e,\*</sup>, R. Sicat<sup>b</sup>, F. Benzonzi<sup>c</sup>, V. Vahrenkamp<sup>a</sup>, V. Bracchi<sup>d</sup>

<sup>a</sup>Physical Sciences and Engineering, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia  
<sup>b</sup>Visualization Core Lab, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia  
<sup>c</sup>Biological and Environmental Science and Engineering, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia  
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<sup>e</sup>Saudi Aramco, Dhahran, Saudi Arabia

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Foraminifera

Fig. 1. Crustacean coralline algae (A) and its corresponding segmented image (B) segmented into voids, sediments, EF and CCA. (C) of voids, sediments, EF and CCA from the ground-truth segmentation method applied to the sub-volume HRCT image of the B.

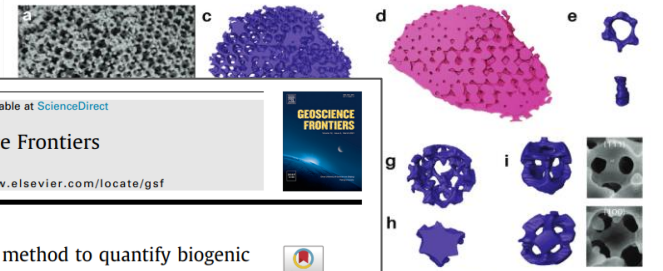
## RESEARCH ARTICLE

small

[www.small-journal.com](http://www.small-journal.com)

## Advancing Membrane Technology: Ordered Macroporous ZIF-67 as a Filler in Mixed Matrix Membranes for Enhanced Propylene/Propane Separation

Daria Poloneeva, Shuvojit Datta, Ronell Sicat, Rushana Khairova, Luis Garzon-Tovar, Anastasiya Bavykina, Mohamed Eddaoudi,\* and Jorge Gascon\*



OM-ZIF-67 particles at low magnification. c) Surface-rendered parts of OM-ZIF-67 particle; g) missing pillar and h) missing pore. d) SEM images.

Additional challenge, the lack of processability in the manufacture of these composite membranes, was recently overcome by processing MOFs through a porous liquid (PL) state.<sup>16</sup> We

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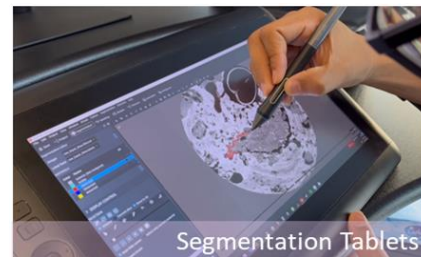
<https://wiki.vis.kaust.edu.sa/highlights/overview>

# KVL offers state-of-the-art visualization facilities

## Display Walls



## AR/VR Hub



<https://wiki.vis.kaust.edu.sa/booking>

# Manual Segmentation Tablets



Book “AR/VR Hub” facility at  
<https://wiki.vis.kaust.edu.sa/booking>.

# Need Help?

[wiki.vis.kaust.edu.sa](http://wiki.vis.kaust.edu.sa)

[help@vis.kaust.edu.sa](mailto:help@vis.kaust.edu.sa)



[AVIZO training](#)  
(October 12-14)



[KVL website](#)

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# Thank you!



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