



ΕΛΛΗΝΙΚΗ ΔΗΜΟΚΡΑΤΙΑ
Εθνικόν και Καποδιστριακόν
Πανεπιστήμιον Αθηνών
— ΙΔΡΥΘΕΝ ΤΟ 1837 —



Τμήμα Αγροτικής Ανάπτυξης,
Αγροδιατροφής και
Διαχείρισης Φυσικών Πόρων
Εθνικό και Καποδιστριακό
Πανεπιστήμιο Αθηνών

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Θέμα: Πρόσκληση σε Επιστημονική Ημερίδα προσκεκλημένων ομιλητών: «From Scientific Ideas to Sustainable Solutions»

Αγαπητές και αγαπητοί συνάδελφοι, Αγαπητές φοιτήτριες, αγαπητοί φοιτητές,

Με ιδιαίτερη χαρά σας προσκαλούμε στην επιστημονική ημερίδα που διοργανώνεται στο Τμήμα μας, από το Εργαστήριο Χημείας και Τεχνολογία Υλικών, με αντικείμενο την

Αξιοποίηση της επιστημονικής έρευνας για τη δημιουργία βιώσιμων τεχνολογικών λύσεων

Τρίτη, 8 Σεπτεμβρίου 2026, Ώρα: 11:00

Μικρό Αμφιθέατρο, Τμήμα Αγροτικής Ανάπτυξης, Αγροδιατροφής και Διαχείρισης Φυσικών Πόρων (ΕΚΠΑ), Συγκρότημα Ευρίπου, Ψαχνά Ευβοίας

Στο πλαίσιο της εκδήλωσης, θα φιλοξενήσουμε δύο διακεκριμένους καθηγητές που θα παρουσιάσουν δύο συμπληρωματικές οπτικές γύρω από τη βιώσιμη επιστήμη και τεχνολογία:

Καθηγητής Gadi Rothenberg (*Chair of Heterogeneous Catalysis and Sustainable Chemistry, University of Amsterdam / Distinguished Visiting Professor, Tsinghua University*) www.hims.uva.nl/hcsc

Θέμα: *Innovation Management in Sustainable Chemistry*

Ο καθηγητής Rothenberg θα αναλύσει τη διαδρομή από την επιστημονική ανακάλυψη στη βιώσιμη καινοτομία, εστιάζοντας σε επιχειρηματικά μοντέλα, πνευματική ιδιοκτησία, στελέχωση ομάδων, χρηματοδότηση και παραδείγματα από νεοφυείς επιχειρήσεις (start-ups).

Καθηγητής Vitaly Gitis (*Head of the Energy Engineering Program, Ben-Gurion University of the Negev*)

Θέμα: *Additive Manufacturing of Functional Ceramic Materials for Environmental and Energy Applications*

Ο καθηγητής Gitis θα παρουσιάσει πώς οι προηγμένες κεραμικές δομές και η προσθετική κατασκευή (3D printing) εφαρμόζονται στην επεξεργασία νερού και λυμάτων, καθώς και στην ανάκτηση πολύτιμων πόρων, όπως το λίθιο και οι σπάνιες γαίες.

Μετά την ολοκλήρωση των ομιλιών θα ακολουθήσει ανοικτή συζήτηση με το κοινό.

Η παρουσία των μελών ΔΕΠ, των ερευνητών, των υποψήφιων διδασκόντων και των φοιτητών/τριών θα αποτελέσει ιδιαίτερη τιμή.

Με εκτίμηση,

Β. Σταθόπουλος

Πρόεδρος του Τμήματος Αγροτικής Ανάπτυξης, Αγροδιατροφής

Χρήσιμα Links

Innovation Management in Sustainable Chemistry: <https://amzn.eu/d/0gakGOnp>

Handbook of Energy, Environment, and the Circular Economy: <https://doi.org/10.1142/13834>

Group website: www.hims.uva.nl/hcsc

Additive Manufacturing of Functional Ceramic Materials for Environmental and Energy Applications

Vitaly Gitis

Sir Leon Bagrit Chair in Computer-Based Global Industry and Scientific Development

Head, Energy Engineering Program

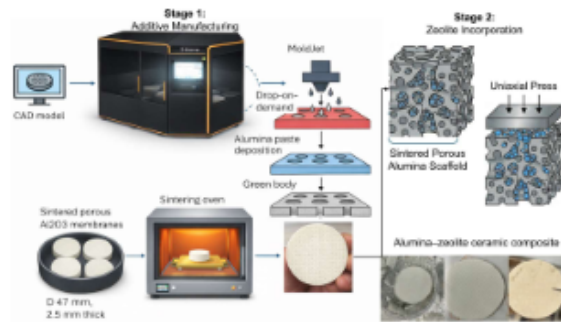
Department of Mechanical Engineering, Faculty of Engineering Sciences, Ben-Gurion University of the Negev, Beer-Sheva, Israel

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This lecture presents a two-stage strategy for manufacturing functional ceramic structures that combines additive manufacturing with the post-fabrication incorporation of active adsorbent materials.

A mechanically robust ceramic body is printed and sintered with a predefined network of flow-through channels, which are subsequently packed with particulate ion-exchange materials such as clinoptilolite zeolite. Keeping the functional particles physically distinct from the ceramic matrix preserves their accessible adsorption sites, while the ceramic structure provides mechanical stability and precise control over flow distribution and residence time. Dynamic-flow

experiments demonstrated the removal of dissolved cobalt ions, with performance governed by operating conditions and channel design. By varying the internal geometry and selecting different functional materials, this approach can be adapted for the removal or recovery of heavy metals, lithium, rare-earth elements, ammonium, and other dissolved species [1, 2]. Technology offers a flexible platform for integrating filtration, adsorption, and ion exchange in continuous-flow devices for water treatment, industrial wastewater processing, and resource recovery from mining and battery-related streams [3].



- [1] Tordjman A.S., Ohauon Y.I., Domshlak D., Metalnikov P., Gitis V., 2026. Binder-Free Clinoptilolite Monoliths Prepared by Cold Consolidation: Structure and Ammonium Uptake. *Chemical Engineering Journal Advances* 26, 104474.
- [2] Tordjman A.S., Biton O., Shamir O., Gitis V., 2026. Continuous-flow treatment of acid mine drainage by cold-consolidated clinoptilolite monoliths: Cu²⁺ uptake, structural resilience, and suppression by trivalent cations. *Minerals Engineering* 247, 110543.
- [3] Gofman N., Shamir H., Gitis V., 2026. Two-Stage Manufacturing Strategy for Architected Alumina–Zeolite Ceramic Composites via MoldJet® Additive Manufacturing and Room-Temperature Consolidation. Unpublished manuscript.

Vitaly Gitis is Professor and holder of the Sir Leon Bagrit Chair in Computer-Based Global Industry and Scientific Development at Ben-Gurion University of the Negev, where he heads the Energy Engineering Program. His research focuses on water process engineering, ceramic membranes, colloidal transport, the water–energy nexus, and additive manufacturing of functional ceramic materials. He has published over 80 peer-reviewed papers, co-authored *Ceramic Membranes: New Opportunities and Practical Applications*, and co-edited major reference works on porous materials, energy, environment, and the circular economy. He has held visiting appointments at the University of Amsterdam, the University of Adelaide, and the China University of Mining and Technology. His work connects fundamental materials and process research with practical solutions for water treatment, energy systems, and sustainable resource recovery.



Innovation Management in Sustainable Chemistry

Gadi Rothenberg

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This interdisciplinary seminar links **science** with **business**. It is aimed at science and engineering students who wish to learn how to turn their scientific discoveries into successful business ventures. First, I will give a short overview of key principles and drivers of sustainable chemistry. We will then discuss how innovations can be transformed into viable and sustainable ventures. Core topics include business archetypes, business models, and innovation narratives, as well as practical aspects such as intellectual property (IP) strategy and team selection. We also examine funding pathways for sustainable start-ups, from FFF money and government funding to strategic investors and venture capital.



The principles are illustrated using two real-life case studies: microbial CO₂ conversion and off-grid energy supply systems. By analysing how these succeeded (or failed!) we will gain insight into the real challenges of building and scaling a sustainable start-up.

The seminar follows my new textbook,^[1] which expands on these themes and includes seven detailed case studies of sustainability-driven start-ups and the personal stories of their founders.

[1] G. Rothenberg, **Innovation Management in Sustainable Chemistry**, Wiley-VCH: Weinheim, 2026, 352 pp. ISBN 978-3-52735451-1.

Gadi Rothenberg is Professor and Chair of Heterogeneous Catalysis and Sustainable Chemistry at the **University of Amsterdam** and Distinguished Visiting Professor at the Department of Energy & Power Engineering, **Tsinghua University**. For the past 25 years he has been teaching courses on catalysis and workshops on scientific writing, business and innovation. Rothenberg has published five books and >250 papers, invented 16 patents and co-founded four companies. His current research focuses on materials for clean energy, biomass conversion, and creating value from waste.

 **Gadi Rothenberg**
Amsterdam, Netherlands

