Δρ. Τόλκου Αθανασία

Επίκουρη Καθηγήτρια

Τμήμα Χημείας, Δημοκρίτειο Πανεπιστήμιο Θράκης
Πανεπιστημιούπολη Καβάλας, Αγ. Λουκάς, Καβάλα, GR-65404, Ελλάδα

Προσωπικά Στοιχεία

Επώνυμο	Τόλκου
Όνομα	Αθανασία
Όνομα Πατρός	Κωνσταντίνος
Όνομα Μητρός	Τόλκου
Τόπος γέννησης	Θεσσαλονίκη, Ελλάδα
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ResearchGate	https://www.researchgate.net/profile/Athanasia-Tolkou
Google Scholar	https://scholar.google.co.uk/citations?user=XivN--cAAAAJ&hl=en
Γλώσσες	Ελληνικά (μητρική), Αγγλικά (C2), Ιταλικά (B2), Γαλλικά (B2)

Τρέχουσα Θέση

02/2025 έως Σήμερα: Επίκουρη Καθηγήτρια, ΦΕΚ διορισμού τ.Γ'/574/19.02.2025, Γνωστικό Αντικείμενο: Επεξεργασία Υγρών Αποβλήτων, Τμήμα Χημείας, Δημοκρίτειο Πανεπιστήμιο Θράκης, Εργαστήριο Χημικής Τεχνολογίας.

09/2025 έως 08/2026: Υπεύθυνη Τομέα Φυσικής Χημείας και Χημικής Τεχνολογίας, Α.Π. ΔΠΘ/ΤΧ/2464/62/09-09-2025, Τμήμα Χημείας, Δημοκρίτειο Πανεπιστήμιο Θράκης.

Εκπαίδευση

Πτυχίο (B.Sc.) στη Χημεία, Τομέας: Χημική Τεχνολογία-Βιομηχανική Χημεία & Χημεία Τροφίμων. Τμήμα Χημείας, Αριστοτέλειο Πανεπιστήμιο Θεσσαλονίκης.

Μεταπτυχιακό Δίπλωμα Ειδίκευσης (M.Sc.), Τομέας: Χημική Τεχνολογία, Τίτλος: «Παρασκευή Καινοτόμων Προσροφητικών Υλικών με Απόθεση Νανοσωματιδίων Οξειδίων Σιδήρου και Μαγγανίου σε Ενεργό Άνθρακα, για τη συνδυασμένη Απομάκρυνση Αρσενικού (V), Χρωμίου (VI) και Αζωχρωμάτων», Εργαστήριο Γενικής και Ανόργανης Χημικής Τεχνολογίας, Τμήμα Χημείας, Αριστοτέλειο Πανεπιστήμιο Θεσσαλονίκης. Επιβλέπων Καθηγητής: Καθ. Γάλλιος Γεώργιος

Διδακτορικό Δίπλωμα (Ph.D.): Τομέας: Χημική Τεχνολογία, Τίτλος: "Σύνθεση και χαρακτηρισμός νέων προ-πολυμερισμένων ανόργανων κροκιδωτικών υλικών και εφαρμογή τους στην επεξεργασία νερού και αποβλήτων", Εργαστήριο Χημικής και Περιβαλλοντικής Τεχνολογίας, Τμήμα Χημείας, Αριστοτέλειο Πανεπιστήμιο Θεσσαλονίκης. Επιβλέπων Καθηγητής: Καθ. Ζουμπούλης Αναστάσιος.

Εκπόνηση Μεταδιδακτορική Έρευνας (PostDoc) στο Εργαστήριο Χημικής και Περιβαλλοντικής Τεχνολογίας, Τμήμα Χημείας, Αριστοτέλειο Πανεπιστήμιο Θεσσαλονίκης: Απομάκρυνση ανόργανων μικρό-

ρύπων από φυσικά νερά, με χρήση καινοτόμων υβριδικών προσροφητικών υλικών. Επιβλέπουσα Καθηγήτρια: Καθ. Δεληγιάννη Ελένη.

Εκπόνηση Μεταδιδακτορική Έρευνας (PostDoc) στο Προηγμένο Εργαστήριο Ήφαιστο, της Χημικής Τεχνολογίας, Τμήμα Χημείας, Δημοκρίτειο Πανεπιστήμιο Θράκης: Σύνθεση καινοτόμων προσροφητικών και κροκιδωτικών υλικών και εφαρμογή τους στην επεξεργασία του νερού και των υγρών αποβλήτων. Επιβλέπων Καθηγητής: Καθ. Κύζας Γεώργιος

Ερευνητικά Ενδιαφέροντα/Πεδία

Τα ερευνητικά της ενδιαφέροντα περιλαμβάνουν την επεξεργασία υγρών αποβλήτων, τις τεχνολογίες επεξεργασίας αστικών, βιομηχανικών και επικίνδυνων λυμάτων (κροκίδωση, προσρόφηση, οζονισμός, βιοαντιδραστήρες μεμβράνης), ανάκτηση θρεπτικών ουσιών (φωσφορικά, νιτρικά) από τα λύματα και αφαίρεση ιόντων, βαρέων μετάλλων και βαφών από το νερό και τα απόβλητα.

Μέλος Επιτροπών/Οργανισμών

- Μέλος του Τμήματος Χημείας και Περιβάλλοντος (VI) της Διεθνούς Ένωσης Καθαρής και Εφαρμοσμένης Χημείας (IUPAC).
- Ένωση Ελλήνων Χημικών (Μέλος της Συνέλευσης των Αντιπροσώπων)
- Πρόεδρος του Δ.Σ. του Επιστημονικού Τμήματος Περιβάλλοντος, Υγείας και Ασφάλειας στην Εργασία (ΤΠΥΑΕ), της Ένωσης Ελλήνων Χημικών.

Ερευνητική Εμπειρία

Συμμετοχή σε Ερευνητικά Προγράμματα

- **Οκτώβριος 2025 – Σεπτέμβριος 2027**:
  ΙΚΥDA 2025 – Συμμετοχή στο Πρόγραμμα Προώθησης της Ανταλλαγής και Επιστημονικής Συνεργασίας μεταξύ Ελλάδας και Γερμανίας (έργο MAD-PFAS) για Υβριδικές τεχνολογίες Μεμβρανών-Προσρόφησης για την αφαίρεση των PFAS από το νερό και τα υγρά απόβλητα.
  Συνεργασία με το Πανεπιστήμιο Duisburg Essen, Duisburg, Γερμανία.
- **Ιούνιος 2025 – Δεκέμβριος 2025**:
  Συμμετοχή στο έργο «Υβριδικές τεχνολογίες έξυπνων μεμβρανών και νέων υλικών για την απομάκρυνση του εξασθενούς χρωμίου από το νερό» (Smart-Mem-Mat) στο πλαίσιο της δράσης "Συμπράξεις Ερευνητικής Αριστείας (REP)" / Κωδικός έργου: ΥΠ3ΤΑ-0560800, που υλοποιείται μέσω του προγράμματος Greece 2.0 – Εθνικό Σχέδιο Ανάκαμψης και Ανθεκτικότητας και χρηματοδοτείται από την Ευρωπαϊκή Ένωση – NextGenerationEU.
- **Οκτώβριος 2023 – Δεκέμβριος 2024 και Οκτώβριος 2025**:
  Συμμετοχή στο έργο «Προηγμένα Υλικά για τη Βιώσιμη Ανάπτυξη: Παραγωγή και Αποθήκευση Πράσινης Ενέργειας, Εξοικονόμηση Ενέργειας και Εφαρμογές Ελέγχου Ρύπανσης» (TAEDR-0535821), στο πλαίσιο της δράσης «Εμβληματικές δράσεις σε διεπιστημονικά επιστημονικά πεδία με ιδιαίτερη έμφαση στο παραγωγικό υπόβαθρο» (ID 16618), χρηματοδοτούμενο από το Greece 2.0 – Εθνικό Σχέδιο Ανάκαμψης και Ανθεκτικότητας και την Ευρωπαϊκή Ένωση – NextGenerationEU.
- **Αύγουστος – Δεκέμβριος 2023**:
  Συμμετοχή στο έργο «Επιλογή ερευνητικών κατευθύνσεων και διαπίστευση παραμέτρων και μεθόδων του χημικού και βιολογικού τομέα του Εργαστηρίου Ελέγχου και Έρευνας της Περιφέρειας Κεντρικής Μακεδονίας», χρηματοδοτούμενο από την Περιφέρεια Κεντρικής Μακεδονίας, όπου πραγματοποιήθηκαν χημικές αναλύσεις περιβαλλοντικών δειγμάτων και σύνταξη παραδοτέων.
- **Αύγουστος 2022 – Ιούλιος 2023**:

Συμμετοχή στο έργο «Ανάπτυξη μεθοδολογίας ολοκλήρωσης για την επεξεργασία μικρορύπων σε αστικά λύματα και στραγγίσματα μέσω συνδυασμού προσρόφησης, διεργασιών προχωρημένης οξείδωσης και τεχνολογίας μεμβρανών» (MIS 5069933, Κωδ. 30338), πράξη συγχρηματοδοτούμενη από το ΕΠ "Ανταγωνιστικότητα – Επιχειρηματικότητα – Καινοτομία" (ΕΠΑΝΕΚ) και την Ευρωπαϊκή Ένωση (ΕΤΠΑ) **στο πλαίσιο του ΕΣΠΑ 2014-2020.**

- **Μάρτιος 2021 – Ιούλιος 2022**:
  Συμμετοχή στο έργο «Παρακολούθηση και μεθοδολογίες απομάκρυνσης αναδυόμενων ρύπων από υγρά απόβλητα» (MIS 5050732 "MOREM", Κωδ. 30316), πράξη συγχρηματοδοτούμενη από το ΕΠ "Ανταγωνιστικότητα – Επιχειρηματικότητα – Καινοτομία" (ΕΠΑΝΕΚ) και την Ευρωπαϊκή Ένωση (ΕΤΠΑ), στο πλαίσιο Διμερούς και Πολυμερούς Ε&Τ Συνεργασίας Ελλάδας – Κίνας.
- **Νοέμβριος – Δεκέμβριος 2021**:
  Συμμετοχή στο έργο «Διερεύνηση της υπολειμματικής συγκέντρωσης φυτοφαρμάκων και εντομοκτόνων σε καλλιέργειες ρυζιού στην πεδιάδα της Θεσσαλονίκης και της πιθανής τοξικότητας του βρώσιμου προϊόντος λόγω παρουσίας ιχνών τοξικών μετάλλων και ορυκτών», χρηματοδοτούμενο από την Περιφέρεια Κεντρικής Μακεδονίας, όπου πραγματοποιήθηκαν χημικές αναλύσεις περιβαλλοντικών δειγμάτων και σύνταξη παραδοτέων.
- **Ιανουάριος – Μάιος 2021**:
  Συμμετοχή στο έργο «Επιλογή ερευνητικών κατευθύνσεων και διαπίστευση παραμέτρων και μεθόδων του χημικού και βιολογικού τομέα του Εργαστηρίου Ελέγχου και Έρευνας της Περιφέρειας Κεντρικής Μακεδονίας», χρηματοδοτούμενο από την Περιφέρεια Κεντρικής Μακεδονίας, με αντικείμενο χημικές αναλύσεις περιβαλλοντικών δειγμάτων και σύνταξη παραδοτέων.
- **Οκτώβριος 2016 – Απρίλιος 2019**:
  Συμμετοχή στο έργο «Διερεύνηση του βαθμού ρύπανσης των αρδευτικών δικτύων και της Τάφρου της πεδιάδας Θεσσαλονίκης και αξιολόγηση επιπτώσεων στο θαλάσσιο περιβάλλον και στις μονοκαλλιέργειες», χρηματοδοτούμενο από την Περιφέρεια Κεντρικής Μακεδονίας.
- **Απρίλιος 2018**:
  Στο πλαίσιο του Ελληνογερμανικού προγράμματος συνεργασίας MOEL-SOEL, χρηματοδοτούμενο από το Γερμανικό Υπουργείο Έρευνας και Τεχνολογίας (BMBF), με τίτλο «Ασφαλή και αξιόπιστα συστήματα ύδρευσης σε προαστιακές, αποκεντρωμένες και αγροτικές περιοχές – SafeWatPRO», πραγματοποιήθηκε ερευνητική επίσκεψη στο Πολυτεχνείο του Αμβούργου (TUHH), τον Απρίλιο 2018, σε συνεργασία με τα Τεχνικά Πανεπιστήμια του Αμβούργου και του Poznan.
- **Μάρτιος 2016 – Δεκέμβριος 2017**:
  ΙΚΥDA 2016 – Συμμετοχή στο Πρόγραμμα Προώθησης της Ανταλλαγής και Επιστημονικής Συνεργασίας Ελλάδας – Γερμανίας (έργο ACR-Tech) με αντικείμενο την επεξεργασία υπόγειων υδάτων για απομάκρυνση αρσενικού και εξασθενούς χρωμίου μέσω καινοτόμων τεχνολογιών προσρόφησης και διήθησης.
  Συνεργασία με το Πανεπιστήμιο του Αμβούργου (TUHH).
- **Μάιος 2013 – Ιούνιος 2015**:
  Συμμετοχή στο κοινό έργο PAVET – PhoReSe για την ανάκτηση φωσφόρου από τα δευτερογενή εκροές των αστικών εγκαταστάσεων επεξεργασίας λυμάτων.
- **Μάιος 2013 – Ιούνιος 2015**:
  Συμμετοχή στο κοινό έργο SYNERGASIA II – FOULMEM για την παρασκευή ειδικών χημικών ουσιών υπό μορφή σύνθετων νανο-συγκολλητικών που μπορούν να χρησιμοποιηθούν για τον έλεγχο του fouling σε βιοαντιδραστήρες με μεμβράνες (MBRs).

Ερευνητική Εμπειρία στο Εξωτερικό

Αύγουστος 2020 – Οκτώβριος 2020, Ιανουάριος 2017 και Ιούλιος 2018:

Τμήμα Θεωρητικών και Εφαρμοσμένων Επιστημών, Πανεπιστήμιο Insubria, Βαρέζε, Ιταλία, υπό την επίβλεψη του Καθηγητή V. Torretta.
Αντικείμενο: Εκπαίδευση στην ανάκτηση ενέργειας από απόβλητα μέσω αναερόβιας χώνευσης, στην αποδοτικότητα της διαχείρισης στερεών αποβλήτων, καθώς και στην επεξεργασία στραγγισμάτων χώρων υγειονομικής ταφής.

Ιούλιος 2016 και 2017:

Τεχνικό Πανεπιστήμιο Αμβούργου (TUHH), Εργαστήριο Υδατικών Πόρων και Ύδρευσης, Γερμανία, υπό την επίβλεψη του Καθηγητή Mathias Ernst.
Αντικείμενο: Προσδιορισμός του δυναμικού ζήτα (Zeta potential) και του μεγέθους σωματιδίων των κροκιδωτικών με το ZETASIZER Nano-ZS (Malvern), καθώς και ανάλυση της κατανομής μεγέθους σωματιδίων κατά όγκο, ιστογράμματος όγκου και καμπύλης αθροιστικής υπομεγέθους κατανομής των σχηματιζόμενων συσσωματωμάτων (flocs) κατά τη διάρκεια πειραμάτων κροκίδωσης με τον αναλυτή μεγέθους και μορφής σωματιδίων EyeTech (Ankersmid).

Υποτροφίες / Βραβεία

Υποτροφία από το Ίδρυμα Ωνάση (Onassis Public Benefit Foundation) (07/2013):
Συμμετοχή σε θερινό σχολείο (Summer School) Φυσικής και Χημείας στο Ίδρυμα Τεχνολογίας και Έρευνας (ITE / FORTH), Κρήτη, με αντικείμενο Νανοεπιστήμες και Νανοτεχνολογία, με έμφαση σε Γραφένιο και άλλα δισδιάστατα (2D) υλικά. Το πρόγραμμα περιλάμβανε διδασκαλία από τον Κωνσταντίν Νοβοσέλοφ (Konstantin Novoselov), νικητή του Νόμπελ για την ανακάλυψη του γραφενίου.

Υποτροφία για συμμετοχή σε συνέδριο (Travel grand) (02/2024):
«Ταξιδιωτική επιχορήγηση για συμμετοχή σε συνέδριο», Οικονομική Κάλυψη της Συμμετοχή στο 1ο Διεθνές Συνέδριο σχετικά με την Κυκλικότητα, την Αειφορία και Ανθεκτικότητα στη Διαχείριση Νερών, Λυμάτων και Λάσπης – CSRW24, 11-13 Φεβρουαρίου 2024, Βαρέζε, Ιταλία https://www.csrw24.it/
Χορηγός: MDPI AG St. Alban-Anlage 66 4052 Basel, Switzerland, “Journal Environments”

Προσκεκλημένες παρουσιάσεις σε διεθνή συνέδρια και/ή θερινά σχολεία (Advanced Schools)

1. **Προσκεκλημένη κεντρική ομιλία** στο MDPI Webinar | MDPI 2025 International Women in Engineering Day, 23 Ιουνίου 2025.
   Τίτλος: Νέες προσεγγίσεις στην επεξεργασία νερού και λυμάτων.
2. **Προσκεκλημένη διαδικτυακή διάλεξη** για φοιτητές BSc και MSc του Τμήματος Χημείας σε τρία πανεπιστήμια του νησιού Σουματρέρα, Ινδονησία: University of Bengkulu (UNIB), University of Lampung (UNILA) και University of Jambi (UNJA), 13 Σεπτεμβρίου 2021.
   Τίτλος: Εφαρμογή της κροκίδωσης για την επεξεργασία νερού και λυμάτων.
3. **Προσκεκλημένες διαδικτυακές διαλέξεις** (15 ώρες) κατά το ακαδημαϊκό έτος 2022/2023 για φοιτητές PhD της Διδακτορικής Σχολής Ποσοτικών και Θετικών Επιστημών, στη Χημεία, στο Τμήμα Χημείας, Πανεπιστήμιο Maria Curie-Skłodowska, Lublin, Πολωνία.
   Τίτλος: Προχωρημένες πτυχές της Χημείας σε σχέση με διάφορες ειδικότητες: Τεχνολογίες Νερού και Λυμάτων.

Δημοσιεύσεις σε διεθνή επιστημονικά περιοδικά με κριτές (71 άρθρα)

1. Kalli, E.; Maroulas, K.N.; Thysiadou, A.A.; Kyzas, G.Z.; **Tolkou, A.K.*** Performance Evaluation of Hybrid and Conventional Coagulants for the Removal of Sunset Yellow and Methylene Violet Dyes from Wastewater. Processes **2025**, 13(11), 3430. https://doi.org/10.3390/pr13113430.
2. Gkika, D.A.; **Tolkou, A.K.**; Kyzas, G.Z.* Comparison of Nanocomposites Groups Performance in Cements: A Review. Earth: Environmental Sustainability 2025, 1(2), 176–194. https://doi.org/10.53941/eesus.2025.100014.

3. Meretoudi, A.D.; Kalampogias, I.; Koumentakou, I.; Kalavrouziotis, I.K.; **Tolkou, A.K**.; Kyzas, G.Z.*. Chitosan/Montmorillonite/Graphene Oxide Composites for the Adsorption of Dyes from Single-Component Solutions, Binary Mixtures, and Real Textile Wastewaters: On Understanding the Adsorption Interactions. Langmuir 2025, 41, 34, 23198–23213. doi:10.1021/acs.langmuir.5c03148.
4. **Tolkou, A.K.***; Giannoulaki, A.; Chalkidi, P.; Arvaniti, E.; Fykari, S.; Kritaki, S.; Kyzas, G.Z. Removal of Anionic and Cationic Dyes from Wastewater by Tetravalent Tin-Based Novel Coagulants. *Processes* **2025**, 13(7), 2103. https://doi.org/10.3390/pr13072103.
5. **Tolkou, A.K.***; Katsoyiannis, I.A.; Kyzas, G.Z. Aluminum-Modified Graphene Oxide Composite Adsorbent for Humic Acid Removal from Water. *J. Compos. Sci.* **2025**, 9, 327. https://doi.org/10.3390/jcs9070327
6. Meretoudi, A.D.; **Tolkou, A.K.**; Kosheleva, R.I.; Xanthopoulou, M.; Tzollas, N.M.; Kostoglou, M.; Katsoyiannis, I.A.; Kyzas, G.Z.*. Carrageenan@Graphene Oxide Nanocomposites for the Adsorption of Trivalent Arsenic, Hexavalent Chromium, and Fluoride Ions from Aqueous Solutions: Conceptualization Modeling of Adsorptive Interfacial Interactions, Kinetics, and Swelling. *Langmuir* **2025**, 41, 16529–16547. doi:10.1021/acs.langmuir.5c01927.
7. Gkika, D.A.; **Tolkou, A.K.**; Poulopoulos, S.G.; Kalavrouziotis, I.K.; Kyzas, G.Z. Cost-Effectiveness of Regenerated Green Materials for Removal of Pharmaceuticals from Wastewater. Waste Manag. **2025**, 204, 114952, doi:10.1016/j.wasman.2025.114952.
8. Gkika, D.A.; **Tolkou, A.K.**; Katsoyiannis, I.A.; Kyzas, G.Z. The Adsorption-Desorption-Regeneration Pathway to a Circular Economy: The Role of Waste-Derived Adsorbents on Chromium Removal. Sep. Purif. Technol. 2025, 368, 132996, doi:10.1016/j.seppur.2025.132996
9. Malouchi, N.; **Tolkou, A.K.**; Maroulas, K.N.; Kosheleva, R.I.; Kostoglou, M.; Katsoyiannis*, I.A.; Kyzas*, G.Z. Colloids and Surfaces A: Physicochemical and Engineering Aspects Polyphenolic Derivatives of Chitosan as Adsorbents for the Removal of Ibuprofen from Pharmaceutical Solutions. Colloids Surfaces A Physicochem. Eng. Asp. 2025, 715, 136647, doi:10.1016/j.colsurfa.2025.136647.
10. Kouzoutzoglou-Efremidou A., **Tolkou* A.K.,** Maroulas K.N., Kosheleva R.I., Katsoyiannis I.A., Kyzas* G.Z. Interfacial adsorption interactions of dyes and chitosan/activated carbon@curcumin derivatives in singe-component and binary solutions", Langmuir 2025 41 (5), 3603-3622. 10.1021/acs.langmuir.4c04769.
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Ανακοινώσεις σε εθνικά και διεθνή συνέδρια (76 Ανακοινώσεις)

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