VERBALE DEL COLLEGIO DEI DOCENTI del Dottorato "M3ES: Models and Methods for Material and Environmental Sciences" del 13 marzo 2024

Il giorno 13 marzo 2024, ore alle ore 09.15 si è riunito in via telematica su piattaforma Teams

il Collegio dei Docenti del Corso di Dottorato "M3ES: Models and Methods for Material and Environmental Sciences".

Presiede il Coordinatore del Corso, Prof. Stefano Lugli.

Svolge le funzioni di Segretario, Prof.ssa Francesca Remitti

Presenti: Arosio, Arletti, Brunelli, Bruno, Cesari, Cipriani, Cocchi, Colombo, Durante, Ferrari, Ferretti, Fraulini, Giovanardi, Lugli, Lusvardi, Malavasi, Malferrari, Mazzucchelli, Menziani, Mucci, Mulas, Muniz-Miranda, Papazzoni, Parenti F., Perra, Piccini, Pigani, Remitti, Rigamonti,Roncaglia, Ronchetti, Scorpio, Simonini, Soldati, Tassi, Tassinari, Todaro, Zambon.

Assenti giustificati: Battistuzzi, Bergami, Bosellini, Conti, Coratza, Corsini, De Martini, Fioroni, Florenzano, Gualtieri, Guidetti, Malagoli, Mercuri, Mittempergher, Paolella, Pedone, Prevedelli, Rebecchi, Righi.

Ordine del Giorno:

1. Comunicazioni
2. Analisi giudizi revisori dottorandi XXXVI ciclo
3. Formulazione del giudizio complessivo e ammissione esame finale dottorandi XXXVI ciclo
4. Definizione giorno e modalità Phd day
5. Nomina commissione Erasmus+
6. Definizione offerta didattica XL ciclo
7. Didattica integrativa II semestre, attribuzione dottorandi
8. Provvedimenti studenti
9. Varie ed eventuali

1. Comunicazioni

1.1 incontro per XL ciclo
Il coordinatore comunica che il giorno 7 marzo su indicazione del Delegato alla Didattica, Prof. Giacomo Cabri, e del Delegato alla Ricerca, Prof. Paolo Pavan, si è tenuto un incontro congiunto delle Commissioni di Ateneo e del Senato Accademico per la Didattica e per la Ricerca per trattare gli orientamenti programmazione dottorati di ricerca 40° ciclo - a.a. 2024/25 e i criteri per la ripartizione delle borse premiali a disposizione dell'Ateneo.
Le nuove borse premiali, che si aggiungeranno alle tre messe a disposizione dall'Ateneo, non sono ancora state assegnate e si rimane in attesa dei decreti ministeriali per le borse PNRR.
La dotazione per il nostro corso sarà di **30.596 euro.**

1.2 Il Coordinatore illustra il nuovo iter e i nuovi moduli per il **finanziamento di borse di studio e modelli di convenzione per il XL ciclo di dottorato, anno accademico 2024/2025** riassumendo i punti salienti della nota rettorale:

a. la reintroduzione della lettera di impegno sottoscritta dal finanziatore privato in via preliminare rispetto alla convenzione;
b. l'introduzione della relativa lettera di accettazione del finanziamento della borsa da parte di UNIMORE;
c. l'introduzione di una verifica preliminare, a cura dell'Ufficio Legale di UNIMORE, sulla solvibilità del finanziatore privato che manifesta l'intenzione di finanziare una borsa di dottorato, con conseguente rilascio dell'autorizzazione a procedere al perfezionamento della convenzione;
d. la previsione della **fidejussione** (assicurativa o bancaria) per i nuovi finanziatori privati e per coloro che in passato sono risultati inadempienti nel finanziamento di borse di dottorato o, in alternativa, del **pagamento anticipato della borsa**; per i finanziatori di borse di dottorato già noti e che hanno provveduto regolarmente al pagamento delle borse non si richiedono garanzie aggiuntive;
e. nei casi di cui al punto sopra in cui sia richiesta la fidejussione, questa dovrà essere depositata contestualmente alla convenzione e, al più tardi, entro e non oltre la data di avvio dei Corsi di dottorato (1° novembre).
l'Ufficio Offerta Formativa Post Laurea provvederà ad adeguare i modelli di convenzione già deliberati dal Consiglio di Amministrazione qualora dovessero intervenire modifiche normative in materia.
Tutti i documenti sono disponibili sul sito del nostro dottorato qui:
http://www.m3es.unimore.it/site/home/organization/documents/articolo370053319.html

1.3. Il Coordinatore chiede a chi fosse interessato a proporre un **progetto di tesi di dottorato per il XL ciclo** di mandare il titolo a **dottorato.m3es@unimore.it** entro il **31 MARZO** per portare in approvazione nel consiglio di aprile e procedere alla pubblicazione sul sito web del dottorato prima dell'uscita del bando.
Si ricorda che ogni docente può proporre un solo progetto di dottorato.

1.4. Il Coordinatore chiede che venga comunicato l'interesse di nuovi membri a partecipare al collegio del XL ciclo, all'indirizzo **dottorato.m3es@unimore.i**t.
Si ricorda che per partecipare serve, per RTD e PA, che superino 2/3 soglie da professore di seconda fascia, e i PO che superano 2/3 soglie da professore di I fascia. Data la premialità proposta da Unimore, serve anche sapere se si superano 2/3 soglie della fascia successiva a quella di inquadramento (RU e RTD -> II fascia, PA-> II fascia, PO-> Commissari). A tal fine verranno chieste queste informazioni all'Ufficio Bibliometrico.
Dopo avere ricevuto questi dati si procederà al calcolo del numero di esterni che possono entrare (docenti Unimore devono essere almeno 75%) e si valuteranno vecchie e nuove richieste di membri esterni.

1.5. La Commissione giudicatrice per il conferimento del titolo di "Dottore di Ricerca" del XXXVI ciclo comunica che l'esame finale si terrà l'8 MAGGIO 2024 alle ore 10.00, aula U0.1, e prevederà 30 minuti di presentazione oltre a 10 minuti di domande.

Membri effettivi della Commissione:
Prof.ssa Maria Cristina Menziani, Università di Modena e Reggio Emilia
Prof.ssa Veronica Rossi, Università di Bologna
Prof. Oscar Paolo Vincenzo Lisi, Università di Catania
Membri supplenti:

Prof. Luca Rigamonti, Università di Modena e Reggio Emilia
Prof. Alessandro Chelli, Università di Parma
Prof. Roberto Sandulli, Università di Napoli "Parthenope"

1.6 Il Coordinatore rinnova la richiesta a docenti e dottorandi di **AGGIORNARE la pagina IRIS con le pubblicazioni.**

1.7 Il Coordinatore comunica che la dott.ssa Cecilia Docchio, nuova Responsabile Amministrativa del DSCG, sta preparando un **vademecum** con le indicazioni per i dottorandi su come gestire le richieste e la documentazione per i rimborsi delle missioni. Non appena completato, verrà organizzato un incontro con tutti i dottorandi per illustrare le procedure. in quella occasione verrà organizzato un momento conviviale in corso di definizione.

2. Analisi giudizi revisori dottorandi XXXVI ciclo

Il Coordinatore illustra i giudizi dei revisori per i dottorandi del XXXVI ciclo che avevano richiesto proroga di 3 mesi: Bertani, Braidi, D'Alessandro, Massa, Serafini **(vedi allegato 1)**

3. Formulazione del giudizio complessivo e ammissione esame finale dottorandi XXXVI ciclo
(Bertani, Braidi, D'Alessandro, Massa, Serafini)

Si passa quindi all'elaborazione del giudizio complessivo per i dottorandi che avevano richiesto proroga di 3 mesi: Bertani, Braidi, D'Alessandro, Massa, Serafini.

Sentiti quindi i supervisori, i co-supervisori e i controrelatori viene quindi proposto il seguente giudizio complessivo per **Marco Bertani:**

Candidato: **Marco Bertani** Ciclo: XXXVI
Tutor: Alfonso Pedone
Titolo della tesi: Exploiting Machine-Learning techniques in computational simulations of oxide glasses
Il Dr. Bertani ha svolto durante il triennio di dottorato un progetto di ricerca mirato allo sfruttamento di tecniche di Machine-Learning per migliorare la simulazione atomistica di vetri a base ossidica multicomponenti. In particolare, il dr. Bertani ha sfruttato tecniche di apprendimento automatico per 1) ottimizzare campi di forza empirici per la simulazione di vetri boratici e borosilicatici; 2) predire shielding NMR di elementi quali Si-29, O-17, Na-23 in vetri silicatici multicomponente con accuratezza confrontabile a quella ottenuta con calcoli DFT; 3) ottimizzazione di reti neurali per la riproduzione di forze atomiche e energie in vetri sodio silicatici. Tale ricerca si è dimostrata altamente innovativa e ha portato alla pubblicazione/sottomissione di 5 articoli scientifici.
Durante il triennio di attività il Dr. Bertani ha dimostrato di possedere competenza, motivazione e notevole curiosità scientifica. La spiccata attitudine alla ricerca, unita a un metodo di lavoro, caratterizzato da precisione e serietà, gli ha permesso di condurre in autonomia il proprio progetto di ricerca, raggiungendo notevoli risultati scientifici.
Il candidato ha mostrato notevole interesse e capacità in ogni fase della ricerca, utilizzando in modo autonomo le sue conoscenze e competenze per risolvere i problemi e con una buona criticità

nell'elaborazione dei dati. Sempre motivato e coinvolto, è stato in grado di portare avanti il progetto di ricerca in modo indipendente, mostrando, inoltre, buona interazione scientifica con gli altri membri dei gruppi di ricerca con cui ha collaborato.
Il Dr. Bertani ha perfezionato la sua preparazione presso il Centro per L'Energia Atomica e Alternativa Francese (Saclay, Parigi) per 6 mesi.
I risultati delle ricerche svolte nell'ambito del dottorato sono stati presentati con successo dal Dr. Bertani in occasione di numerose conferenze nazionali ed internazionali, dimostrando ottime capacità espositive.
In sintesi, la valutazione complessiva dell'attività di dottorato è certamente da considerarsi eccellente.

Il Collegio approva.

Sentiti i supervisori, i co-supervisori e i controrelatori viene quindi proposto il seguente giudizio complessivo per **Niccolò Braidi** :

Ciclo: XXXVI
Candidato: Niccolò BRAIDI
Tutor Scientifico: Prof. Francesca PARENTI
Controrelatore: Fabrizio Roncaglia
Titolo della tesi: "Scalable ARGET ATRP of styrene: studies on crosslinking and post-functionalization"
Giudizio sull'attività di ricerca del Dr. Niccolò Braidi
L'attività di ricerca scientifica svolta dal Dr. Braidi durante il triennio è stata incentrata sullo studio della polimerizzazione radicalica a trasferimento di atomo con rigenerazione dell'attivatore per trasferimento elettronico (ARGET-ATRP) di monomeri stirenici in diverse condizioni sperimentali. In particolare, si è occupato dello studio di iniziatori clorurati e dell'effetto esercitato da diverse variabili (temperatura, solvente, catalizzatore, tipo di attivatore e di base) sulla reazione di polimerizzazione oltre che della sua scalabilità. Il Dr. Braidi si è inoltre occupato dello studio della post-funzionalizzazione dei polimeri cloro terminati ottenuti al fine di generare polistireni a bassa dispersità con terminazioni reattive (idrossido, tiolo, epossido, azide, ammino) curandosi di applicare laddove possibile, metodiche semplici e trasferibili al contesto industriale.
Parallelamente il Dr Braidi ha eseguito studi cinetici su reticolazioni anomale osservate nell' ARGET-ATRP dello stirene in presenza di iniziatori bifunzionali e sull'ARGET-ATRP dello stirene solfonato di sodio, ha condotto studi elettrochimici sulla stabilità del complesso catalizzatore e si è occupato della generazione di polistireni termostabili da ARGET-ATRP con iniziatori bifunzionali.
Il Dr Braidi ha inoltre trascorso un periodo di 6 mesi presso il laboratorio del Prof. F. Du Prez a Gent (Belgio) durante il quale si è occupato della sintesi di tris-polistireni amino terminati tramite post-funzionalizzazione di analoghi bromurati e del loro successivo utilizzo come agenti reticolanti in legami dinamici del tipo "vinylogous urethane" in resine polimeriche con requisiti di riciclabilità.
I risultati della ricerca condotta dal Dr Braidi hanno portato a 7 pubblicazioni scientifiche in riviste su riviste internazionali indicizzate WoS e Scopus, 5 comunicazioni poster a congressi nazionali e internazionali e 2 attività seminariali presso il Dipartimento di Scienze Chimiche e Geologiche.
Il Dr. Braidi ha dimostrato grande motivazione, impegno, interesse e propensione per la ricerca scientifica che ha condotto in maniera metodica con grande autonomia, serietà e passione. Ha saputo cogliere positivamente le sfide che gli si sono poste, studiando le problematiche da diverse

prospettive e sfruttando in maniera opportune le sue competenze nelle diverse discipline chimiche. Ha inoltre affiancato diversi laureandi durante il loro internato, proponendo interessanti obiettivi e spronandoli al loro raggiungimento, meritando anche l'assegnazione del premio 'Giorgio Squinzi' Federchimica ed. 2021-22, per la migliore tesi di laurea magistrale con contenuti di interesse industriale.
Pertanto la valutazione del candidato è complessivamente eccellente.

Il Collegio approva.

Sentiti i supervisori, i co-supervisori e i controrelatori viene quindi proposto il seguente giudizio complessivo per **Alessandro D'Alessandro**

Candidato: Dr. Alessandro D'Alessandro
Tutor Scientifico: Prof. Marina Cocchi
Controrelatore: Prof. Laura Pigani
Titolo della tesi**:** Chemometrics aided quality assessment from lab to plant in an Industry 4.0 context
Alessandro D'Alessandro, enrolled in the XXXVI cycle of the Research Doctorate "Models and Methods for Material and Environmental Sciences", in an industrial doctorate framework with Fratelli Barilla SpA., under the supervision of Prof. Marina Cocchi, (Department of Chemical and Geological Sciences, University of Modena and Reggio Emilia, Italy). The Thesis project was to develop analytical-chemometric methods suitable for quality control of raw materials, semifinished and finished products both in a quality laboratory analysis context, and in a process monitoring one. To this aim "Pesto alla Genovese" production was selected as a representative benchmark. The main outcome of the Thesis has been showing the feasibility and a roadmap for the application of Food Processing 4.0 in an industrial context, which requires a highly interconnected production environment (sensors, devices, measurement systems, machinery, data storage) and interdisciplinary expertise in various fields. In fact, establishing a bridge between academia and companies is crucial for spreading Quality by Design (QbD) and Process Analytical Technology (PAT) approaches in the food industry and initiatives like this PhD Thesis could accelerate this transition.
Dr. D'Alessandro acquired deeper knowledge of chemometrics tools such as ASCA, MCR, multivariate control chart, pre-processing of signal and chromatograms. Moreover, he faced the issues connected to higher order data such as images (both RGB and Hyperspectral) and hyphenated techniques (GC-IMS). Hence, Dr. D'Alessandro has acquired the ability to select the most efficient chemometrics tools and to tailor them on specific problem. He was able of transferring his results in the R&D and at the plant highlighting the advantages of a multivariate approach. Moreover, he has spent two months at the INRA facilities in Montpellier, France under the guidance of Prof. Jean Michel Roger.
He has worked in a diligent and conscientious manner and has gained competence to undertake independent research in the discipline. Alessandro has been also collaborating both in Montpellier and Modena with Post Doc and PhD students, showing curiosity and easiness of interaction with people.
He has presented the results of his research in several national and international workshops and conferences including two oral presentations. Some of the results have been presented in publications on important journals in the field of research (3 published papers, 1 submitted

and 3 in preparation). In addition, he co-authored 2 published papers arising from collaboration with different researchers.
In consideration of the above, the doctoral path and the achieved results are considered excellent.

Il Collegio approva.

Sentiti i supervisori, i co-supervisori e i controrelatori viene quindi proposto il seguente giudizio complessivo per **Edoardo Massa**:

Candidato: **Edoardo Massa**
Tutor Scientifico: Prof. Roberto Guidetti
Controrelatore: Prof. Mary Antonio Donatello Todaro
Titolo della tesi: Inside Tardigrada's apomorphy: composition, morphofunctional adaptation, and evolution of their cuticular-derived structures
Il Dottorando Edoardo Massa ha svolto la sua ricerca triennale sullo studio dell'evoluzione delle strutture cuticolari dei tardigradi per comprenderne le sinapomorfie e la loro origine.
A tale scopo ha indagato con approcci multidisciplinari e utilizzando diverse tecniche di indagine aspetti inerenti la natura chinica di tali strutture, le relazioni morfo-funzionali e le possibili omologie all'interno degli individui e tra taxa di tardigradi. Lo studio si è concentrato prevalentemente sull'apparato di alimentazione per valutarne l'origine e verificare la sua possibile derivazione dall'internalizzazione delle ancestrali prime paia di zampe (internalization hypothesis), analogamente a quanto avvenuto in taxa affini di Panarthropoda. In relazione a questi temi ha anche affrontato lo studio degli effetti di inquinanti (piogge acide) sulla sopravvivenza e le strutture di CaCO3 dei tardigradi e sulla diversità di queti animali in aree italiane e estere.
Per i suoi studi ha utilizzato tecniche innovative per il settore (i.e., Confocal laser scanning microspcopy, Sectioning with Focus Ion Beam and SE and Backscattered Electron). Attraverso analisi comparate, su deverse linne evolutive di tardigradi, il dr. Massa, ha evidenziato come l'apparato alimentare risulti formato da quattro composti: molecole chitina, collagene-simili e cheratino-simili e aragonite. I composti identificati hanno una disposizione stratificata, che differisce tra le parti che compongono l'apparato buccofaringeo e altre strutture sclerificate come unghie e cuticola. Sulla base della posizione degli strati e delle funzioni note per le diverse strutture, i composti sono risultati necessari per resistere a diverse sollecitazioni meccaniche come pressione, mobilizzazione frequente o deformazione sotto elevata trazione.
Ha inoltre trovato possibili supporti all'internalization hypothesis attraverso analisi chimiche, morfologiche e di immuno-staining del sistema nervoso e muscolare, identificando ad esempio possibili omologie tra le unghie dei tardigradi e il loro l'apparato degli stiletti.
Ha svolto il suo soggiorno all'estero per presso i laboratori del Prof. Theerawat Tharasanit della Chulalongkorn University (Thailand) e della Prof. Nadja Møbjerg dell'University of Copenaghen (Danimarca).
I risultati della sua tesi si sono concretizzati in sei pubblicazioni su riviste indicizzate e alla partecipazione a tre congressi internazionali e tre congressi nazionali.
Durante questi tre anni ha dimostrato di essere un ricercatore appassionato e competente, dimostrandosi curioso e interessato non solo alle tematiche della sua tesi ma a quanto avveniva in laboratorio. Si è dimostrato un prezioso aiuto nella conduzione delle attività di laboratorio e di

supporto ai tirocinanti e ai colleghi dottorandi. Ha dimostrato la capacità di acquisire nuove tecniche e competenze nell'uso della nuova strumentazione. Ha dimostrato autonomia e indipendenza, ma anche capacità di lavorare in gruppo e di saper gestire le relazioni interpersonali.
In sintesi, la valutazione complessiva dell'attività di dottorato è certamente da considerarsi eccellente.

Il Collegio approva.

Sentiti i supervisori, i co-supervisori e i controrelatori viene quindi proposto il seguente giudizio complessivo per **Giovanni Serafini**:

Candidato: **Giovanni Serafini**
Titolo tesi: Taphonomy and deadfall ecology of Mesozoic pelagic reptiles from deep-water settings
Supervisore: Prof. Cesare A. Papazzoni
Co-Tutor: Prof. Silvia Danise (Università di Padova), Dr. Erin Maxwell (Naturkunde Museum Stuttgart)
Controrelatore: Prof. Francesca Bosellini
Il candidato Giovanni Serafini ha svolto durante il triennio di dottorato un progetto di ricerca di argomento paleontologico, riguardante la tafonomia dei grandi rettili marini del Mesozoico depositatisi in ambienti di mare profondo, mettendo in evidenza le loro affinità e differenze rispetto alle comunità di whalefall attuali. Gli studi sono stati svolti principalmente su materiale italiano, utilizzando come riferimento di base reperti di Fossil-Lagerstätten della Germania meridionale. I metodi di indagine hanno coinvolto diverse tecniche, tra le quali fluorescenza UV, CT-scan, sezioni istologiche, analisi di microfacies sulle matrici degli esemplari studiati, caratterizzazione geochimica di ossa e matrici, in qualche caso ricerca microstrutturale dei tessuti molli.
Una parte importante di questo lavoro ha riguardato la caratterizzazione di fossili provenienti dal Rosso Ammonitico Veronese (RAV; Giurassico) e da altri depositi pelagici profondi quali la Maiolica e il Lastame (Cretaceo). Inoltre, ha individuato con successo depositi bromalitici (prodotti di rigurgiti) costituiti da ossa di coccodrilli marini (teleosauri) e ittiosauri. La seconda parte del lavoro riguarda invece i depositi abissali rappresentati dalle Liguridi dell'Appennino settentrionale, dove la conservazione dei reperti, pur frammentari, presenta peculiarità non riscontrabili nei contesti di cui sopra.
Il lavoro del candidato ha sempre beneficiato della collaborazione con diversi gruppi di ricerca nazionali e internazionali, con i quali le interazioni sono state numerose e proficue, a riprova della capacità del candidato di lavorare in team. I risultati sono stati presentati in numerose occasioni a congressi e convegni (nazionali ed internazionali) e in gran parte già pubblicati, spesso a primo nome, su riviste scientifiche di buona e ottima qualità. Ben 6 degli articoli pubblicati durante il periodo del dottorato dal candidato sono censiti su Scopus. La padronanza della lingua inglese e delle tematiche sviluppate hanno permesso al candidato, in occasione di incontri internazionali, di confrontarsi alla pari con gli specialisti del campo.
L'elaborato finale comprende gli articoli già pubblicati o sottoposti per la pubblicazione, ma non è limitato a questi, comprendendo un'ampia introduzione e vari capitoli di collegamento tra le diverse parti che rendono la tesi qualcosa di più rispetto alla collezione di articoli.

In sintesi, si ritiene di dare al complesso delle attività del candidato un giudizio eccellente.

Il Collegio approva.

Dopo approfondita discussione, Il Collegio quindi **approva** l'ammissione dei dottorandi Bertani, Braidi, D'Alessandro, Massa, Serafini alla prima sessione di esami che si svolgerà l'**8 maggio 2024.**

Si ricorda che il Collegio dovrà approvare l'invio della tesi ai revisori di **Carlotta Parenti** entro il 30 luglio (revisori approvati nel consiglio del 12 settembre 2023), l'esame finale si svolgerà nell'intervallo compreso tra il 1° luglio e il 30 novembre 2024.

4. Definizione giorno e modalità Phd days

Il Coordinatore ricorda le modalità di svolgimento del **Phd days** dello scorso anno, viene deciso di continuare con la valutazione da parte della commissione didattica, accompagnandola con un premio del pubblico.
Dopo ampia discussione viene dato mandato ai rappresentanti dei dottorandi di valutare le diverse proposte per preparare un programma condiviso che verrà discusso nel prossimo collegio.

5. Nomina commissione Erasmus+

Dopo ampia discussione si propone di **confermare** i membri della Commissione giudicatrice **Erasmus+** attualmente in carica composta dal Coordinatore Stefano Lugli e dai colleghi Anna Cipriani (sostituto: Diego Arosio), Mary Antonio D. Todaro (sostituto Assunta Florenzano), Francesco Tassinari (sostituto Luca Rigamonti).

6. Definizione offerta didattica XL ciclo

La Commissione didattica illustra la proposta:

2025
<u>Scientific Programming Languages (20h)</u>
Numerical simulations are calculations performed on a computer using programs that implement a mathematical model for chemical, physical, or biological systems. They are fundamental to the study of processes that are too complex to be solved analytically. While the largest and most accurate simulations often use advanced computing capabilities, there is a large class of small and intermediate problems in many disciplines that can be addressed with more manageable tools. This course introduces modern programming languages (e.g. Python, R, Matlab, etc.) and computational tools (e.g. artificial intelligence - machine learning, deep learning) aimed at solving problems in earth, life and chemical sciences.

<u>Relevant topics in chemometrics and data analysis (16h)</u>
Instrumental or computational data contain useful information that can be difficult to extract. This course aims to provide the tools necessary to extract useful information from complex and large data sets that are difficult to interpret using traditional statistical techniques. This course introduces multivariate data analysis techniques (PCA, PLS) and kernel-based methods (kernel PCA, kernel

SIMCA, kernel PLS, support vector machines (SVM)). Case studies will be presented to show the potential of the techniques described and different data sets will be analyzed.

Hot environmental topics in a changing world (16h)
Climate change, increasing demand for raw materials, the impact of pollution and waste, loss of biodiversity and the potential extinction of many plants and animals are putting pressure on our rapidly changing planet. This course will take students across disciplines, from emerging hot topics in geology to the natural sciences, from green economics to technology, to develop a deeper understanding of environmental issues and sustainability concerns.

Scientific Communication in English (20h)
This course will teach you how to communicate effectively in English (and any other language) in the academic world. You will learn how to: - Write a research paper using a simple, clear style that allows your readers to immediately understand your unique contribution; - Present your research at an international conference and network successfully to increase your chances of future collaborations; - Write effective emails to editors and fellow academics; - Write a CV. The classes are dynamic, interactive and, above all, very practical.

Corso Competenze Trasferibili (24h)
Opportunità e percorsi per la ricerca e l'innovazione nazionali e internazionali; Project Design; La Mobilità per i ricercatori, Full Bright ed Euraxesses Portal; Budgeting; Business Planning; I finanziamenti EU per la cittadinanza attiva; Career Development; I diritti di Proprietà Intellettuale

Corso Soft Skills "Bibliographic research, scientific writing and dissemination" (16h)
Introduction to bibliographic research, the use of scientific databases, the management of bibliographic citations in scientific work. Introduction to bibliometric indices and their importance in scientific publications.

2026

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Climate change, increasing demand for raw materials, the impact of pollution and waste, loss of biodiversity and the potential extinction of many plants and animals are putting pressure on our rapidly changing planet. This course will take students across disciplines, from emerging hot topics in

geology to the natural sciences, from green economics to technology, to develop a deeper understanding of environmental issues and sustainability concerns.

Scientific Communication in English (20h)
This course will teach you how to communicate effectively in English (and any other language) in the academic world. You will learn how to: - Write a research paper using a simple, clear style that allows your readers to immediately understand your unique contribution; - Present your research at an international conference and network successfully to increase your chances of future collaborations; - Write effective emails to editors and fellow academics; - Write a CV. The classes are dynamic, interactive and, above all, very practical.

Corso Competenze Trasferibili (24h)
Opportunità e percorsi per la ricerca e l'innovazione nazionali e internazionali; Project Design; La Mobilità per i ricercatori, Full Bright ed Euraxesses Portal; Budgeting; Business Planning; I finanziamenti EU per la cittadinanza attiva; Career Development; I diritti di Proprietà Intellettuale

Corso Soft Skills "Bibliographic research, scientific writing and dissemination" (16h)
Introduction to bibliographic research, the use of scientific databases, the management of bibliographic citations in scientific work. Introduction to bibliometric indices and their importance in scientific publications.

Il Collegio approva.

7. Didattica integrativa II semestre, attribuzione dottorandi

Il Collegio, sentiti i Dottorandi, attribuisce le seguenti attività di didattica integrativa richieste dai Consigli di Interclasse:

Nome Corso per cui si richiede l'attività integrativa	**Numero di ore richieste**	**CCL richiedente**	**titolare corso**	**Dottorando a cui viene assegnato l'incarico**
DIVERSITÀ DELLE PIANTE TERRESTRI	2	Laurea Triennale in Scienze Biologiche	Anna Maria MERCURI	**Lorenzo BRAGA**.
Mineralogia	10	Laurea Triennale in Scienze Geologiche	(Gualtieri/Fantini)	Francesco Colombo
Materie Prime Naturali	8	Laurea Magistrale in Geoscienze,	Arletti/Gualtieri	Mattia Sisti

		Georischi e Georisorse		
Risorse idriche sotterranee	6	Laurea Magistrale in Geoscienze, Georischi e Georisorse	Ronchetti	Marco Sabattini

8. Provvedimenti studenti

8.1 Lorenzo Braga XXIX ciclo chiede nulla osta per tenere un workshop e degli interventi nell'ambito del Festival Respiri di Terra. Gli interventi si svolgeranno il 22 e il 23 marzo pp. vv. Per quest'attività, l'amministrazione comunale ha proposto come compenso un gettone di presenza che ammonta, approssimativamente, a 300-400 Euro.
Il workshop consisterà in un gioco da svolgere con classi della Scuola Primaria. L'obiettivo didattico è il riconoscimento di alcuni tipi di ambiente, e l'associazione ad essi degli organismi vegetali che possono trovarvisi, dandoci essi stessi un'indicazione molto precisa delle caratteristiche dell'ambiente in cui vivono. Gli interventi invece saranno dei commenti, in chiave ambientale e nell'ottica del cambiamento globale e climatico, ai film Ponyo sulla Scogliera (Miyazaki, 2008) per le classi della Scuola Secondaria di Primo Grado e Antropocene - L'epoca umana (Baichwal, de Pencier e Burtynsky, 2018) per le classi della Scuola Secondaria di Secondo Grado.

8.2 L'ufficio dottorati comunica che ANVUR ha accettato la richiesta di modifica al progetto richiesta per il dott. **Elia Frignani**, titolare di borsa PNRR I.3.3 innovativi XXXVIII ciclo, da prof. Laura Pigani, supervisore, e il prof. Fabrizio Roncaglia, co-supervisore, per sostituire la sede estera precedentemente comunicata (Universidad de Cadiz) con:
Universidad de Salamanca
Área de Nutrición y Bromatología
Facultad de Farmacia
Campus Miguel de Unamuno
E-37007 Salamanca (Spain)
Si tratta della sede presso cui lavora il "Grupo de investigacion en polifenoles" coordinato dal prof. Celestino Santos-Buelga. Le attività di ricerca del gruppo sono perfettamente coerenti con la tematica di dottorato dello studente e gli permetteranno di raggiungere una formazione approfondita nel campo delle metodologie di estrazione e di caratterizzazione di componenti bioattivi di origine vegetale.

8.3 L'ufficio dottorati comunica la rinuncia agli studi di **BONIBURINI Matteo** (borsa Ateneo - XXXVIII ciclo).

8.4 L'ufficio dottorati comunica la rinuncia agli studi di **MARENGHI Lorena** (borsa INGV - XXXIX ciclo).

8.5 **Chiara Cavazzoli**, dottoranda del XXXIX ciclo del corso M3ES chiede l'autorizzazione a svolgere attività di tutorato (Fondo Sostegno Giovani) di Chimica Inorganica per un totale di 25 ore, con il docente Gigliola Lusvardi per il terzo anno del corso di laurea triennale in Chimica durante il secondo semestre dell'A.A. 2023/2024.

Il Collegio approva

8.6 **Francesca Fraulini**, dottoranda del XXXVII ciclo del corso M3ES chiede l'autorizzazione a svolgere attività di tutorato (Fondo Sostegno Giovani) di Chimica Inorganica per un totale di 25 ore, con il docente Gigliola Lusvardi per il terzo anno del corso di laurea triennale in Chimica durante il secondo semestre dell'A.A. 2023/2024.

Il Collegio approva

8.7 **Anna Gambini**, dottoranda del XXXIX ciclo del corso M3ES chiede l'autorizzazione a svolgere attività di tutorato (Fondo Sostegno Giovani) di Chimica Organica per un totale di 30 ore, con il docente Adele Mucci per il terzo anno del corso di laurea triennale in Chimica durante il secondo semestre dell'A.A. 2023/2024.

Il Collegio approva

9. Varie ed eventuali

Nulla da discutere.

Non essendoci altro da deliberare, la Seduta è chiusa alle ore 11.12

Il Coordinatore del Corso di Dottorato M3ES Stefano Lugli

Please complete this summary report (in Italian or in English) and return this form, together with your full report or annotated pdf to:

dottorato.m3es@unimore.it

1.Title of the Thesis/ Name of Candidate:
'Chemometrics aided quality assessment from lab to plant in an Industry 4.0 context' Alessandro D'Alessandro.

2. Please indicate, by ticking the appropriate box, if the thesis has fulfilled the following criteria. If you do not indicate 'Yes' for any of these criteria, please give your reason(s) for doing so, either in the 'Comment' field or in your report.

2.1 Is the thesis significant and convincing?

X Yes, as it is.

☐ Yes, but some minor revisions and clarifications are needed.
☐ There are major errors or gaps in the thesis but it could still become significant with major changes, revisions, and/or additional data.
☐ No, the thesis is not strong.

Comment:
The present research work and the results described in the present PhD dissertation are characterised by a good degree of originality, completeness, and relevance to the sector of analytical chemistry.

2.2 Do the methods, data, and analysis support the conclusions?

X Yes

☐ Mostly yes, but some further information and/or data are needed.
☐ No

Comment:
The instrumental methods have been applied correctly, the methods of data analysis have been chosen accurately, the analyses have been carried out rigorously, the chemometrics models validated and therefore the results and conclusions obtained are of high quality.

2.3 Is the referencing appropriate?

X Yes

☐ Mostly yes, but some additions are necessary.
☐ No

Comment:
Bibliographical references are given at the end of each chapter and this helps the consultation. The articles cited are updated and adequate.

Is the organization/presentation of high quality?

X Yes

- ☐ The organization of the manuscript and presentation of the data and results need some improvement.
- ☐ No

Comment:
The whole document is very well structured and written in a rigorous and clear way

3. Recommendations: (Please mark the appropriate box)
In formulating a recommendation, examiners need not give equal weight to each of the criteria specified in Point 2 (above).
Greatest emphasis should be placed on the rigor and quality of the research done and obtained results, and, the candidate's ability to evaluate his/her research critically in the context of the relevant literature.
If you think that the dissertation is outstanding, please give your reason(s) for doing so, either in the 'Comment' field or in your report.

The dissertation:

- ☐ is outstanding

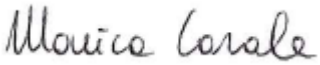
X should pass without the need for corrections

- ☐ should pass after minor changes (as indicated in the full report) have been made
- ☐ should pass after moderate changes (as indicated in the full report) have been made
- ☐ should not pass, but the candidate should be invited to revise and resubmit the dissertation (as indicated in the full report) after six months for reexamination
- ☐ should not pass, and the degree not be awarded

Comment: _____

EXAMINER'S NAME Monica Casale

SIGNATURE



DATE 26/02/2024

1. Exploiting Machine-Learning techniques in computational simulations of oxide glasses / Marco Bertani

2. Please indicate, by ticking the appropriate box, if the thesis has fulfilled the following criteria.

2.1 Is the thesis significant and convincing?

☐ Yes, as it is.

The research described in the PhD thesis has been carried out using innovative methodological methods and the results of it are important not only for their stated purpose, but also under the computational viewpoint as a guide for future works in the same area.

2.2 Do the methods, data, and analysis support the conclusions?

☐ Yes

The methods are appropriate and well described. Since roughly half of the thesis is methodological in nature, the candidate has dedicated a large part of his time to devise and implement the approach and the flow of calculations in a meaningful and appropriate way. There are no issues to point out and I have especially appreciated the description of the computational methods that is detailed, but concise enough to not prevail over the rest of the thesis.

2.3 Is the referencing appropriate?

☐ Mostly yes

(**Non-mandatory**) The bibliography could be revised and adapted to the standard practices: e.g. no "(issue)" after volume, no months in the date and no DOIs. I would also suggest that either all cited references have a link, or none has. If the candidate has used a citation manager (e.g. *bibtex*) this is straightforward and requires just a few minutes.

2.4 Is the organization/presentation of high quality?

☐ Yes

No problems detected. The thesis is well organized and the narrative flows from the introduction to the conclusions seamlessly.

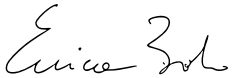
3. Recommendations:

The dissertation:

☐ should pass without the need for corrections

Comment: The thesis can be discussed in the present form without substantial corrections or other interventions. There are very few minor changes that I highlighted in the report. Overall, the thesis is the result of a well-planned and well-conducted work. The presentation is of high quality, and it has been a pleasure to read.

Enrico Bodo



Rome 23/02/2024

Please complete this summary report (in Italian or in English) and return this form, together with your full report or annotated pdf to:
dottorato.m3es@unimore.it

1.Title of the Thesis/ Name of Candidate: Exploiting Machine-Learning techniques in computational simulations of oxide glasses / Marco Bertani

2. Please indicate, by ticking the appropriate box, if the thesis has fulfilled the following criteria. If you do not indicate 'Yes' for any of these criteria, please give your reason(s) for doing so, either in the 'Comment' field or in your report.

2.1 Is the thesis significant and convincing?

XX Yes, as it is.
Yes, but some minor revisions and clarifications are needed.
There are major errors or gaps in the thesis but it could still become significant with major changes, revisions, and/or additional data.
No, the thesis is not strong.

Comment: Very nice work with a multitude of interesting results presented in a convincing manner

2.2 Do the methods, data, and analysis support the conclusions?

XX Yes
Mostly yes, but some further information and/or data are needed.
No

Comment: Yes, the conclusions are fully supported by the applied methods and presented data

2.3 Is the referencing appropriate?

XX Yes
Mostly yes, but some additions are necessary.
No

Comment: Excellent bibliography

2.4 Is the organization/presentation of high quality?

XX Yes
The organization of the manuscript and presentation of the data and results need some improvement.
No

Comment: Yes, the organization of the thesis is very logical and the text is very readable

3. Recommendations: (Please mark the appropriate box)
In formulating a recommendation, examiners need not give equal weight to each of the criteria specified in Point 2 (above).
Greatest emphasis should be placed on the rigor and quality of the research done and obtained results, and, the candidate's ability to evaluate his/her research critically in the context of the relevant literature.
If you think that the dissertation is outstanding, please give your reason(s) for doing so, either in the 'Comment' field or in your report.

The dissertation:

XX is outstanding
should pass without the need for corrections
should pass after minor changes (as indicated in the full report) have been made
should pass after moderate changes (as indicated in the full report) have been made
should not pass, but the candidate should be invited to revise and resubmit the dissertation (as indicated in the full report) after six months for reexamination
should not pass, and the degree not be awarded

Comment: The thesis contains a multitude of interesting results that could only be obtained by using a large variety of
methods. The candidate has done an outstanding work to master these approaches and to extract interesting and valuable information on oxide glasses.

EXAMINER'S NAME Walter Kob

SIGNATURE 

DATE February 28, 2024

Please complete this summary report (in Italian or in English) and return this form, together with your full report or annotated pdf to:
dottorato.m3es@unimore.it

1.Title of the Thesis/ Name of Candidate:

Inside Tardigrada's apomorphy: composition, morphofunctional adaptation, and evolution of their cuticular-derived structures / Edoardo Massa

2. Please indicate, by ticking the appropriate box, if the thesis has fulfilled the following criteria. If you do not indicate 'Yes' for any of these criteria, please give your reason(s) for doing so, either in the 'Comment' field or in your report.

2.1 Is the thesis significant and convincing?

- ☒ Yes, as it is.
- ☐ Yes, but some minor revisions and clarifications are needed.
- ☐ There are major errors or gaps in the thesis but it could still become significant with major changes, revisions, and/or additional data.
- ☐ No, the thesis is not strong.

Comment:

_____

2.2 Do the methods, data, and analysis support the conclusions?

- ☒ Yes
- ☐ Mostly yes, but some further information and/or data are needed.
- ☐ No

Comment:

_____

2.3 Is the referencing appropriate?

- ☒ Yes
- ☐ Mostly yes, but some additions are necessary.
- ☐ No

Comment:

_____

2.4 Is the organization/presentation of high quality?

- ☐ Yes
- ☒ The organization of the manuscript and presentation of the data and results need some improvement.

☐ No

Comment: The introduction contains some typos and grammatical errors. This should be corrected.

3. Recommendations: (Please mark the appropriate box)
In formulating a recommendation, examiners need not give equal weight to each of the criteria specified in Point 2 (above).
Greatest emphasis should be placed on the rigor and quality of the research done and obtained results, and, the candidate's ability to evaluate his/her research critically in the context of the relevant literature.
If you think that the dissertation is outstanding, please give your reason(s) for doing so, either in the 'Comment' field or in your report.

The dissertation:

- ☐ is outstanding
- ☐ should pass without the need for corrections
- ☐ should pass after minor changes (as indicated in the full report) have been made
- ☐ should pass after moderate changes (as indicated in the full report) have been made
- ☐ should not pass, but the candidate should be invited to revise and resubmit the dissertation (as indicated in the full report) after six months for reexamination
- ☐ should not pass, and the degree not be awarded

Comment: See 2.4 above.

EXAMINER'S NAME
Paul J. Bartels

SIGNATURE

DATE
11-Feb-24

1.Title of the Thesis/ Name of Candidate:

Scalable ARGET ATRP of styrene: studies on crosslinking and post-functionalization
Niccolò Braidi

2.

2.1 Is the thesis significant and convincing?

- ☒ Yes, as it is.
- ☐ Yes, but some minor revisions and clarifications are needed.
- ☐ There are major errors or gaps in the thesis but it could still become significant with major changes, revisions, and/or additional data.
- ☐ No, the thesis is not strong.

Comment: n/a

2.2 Do the methods, data, and analysis support the conclusions?

- ☒ Yes
- ☐ Mostly yes, but some further information and/or data are needed.
- ☐ No

Comment: n/a

2.3 Is the referencing appropriate?

- ☒ Yes
- ☐ Mostly yes, but some additions are necessary.
- ☐ No

Comment: n/a

2.4 Is the organization/presentation of high quality?

- ☒ Yes
- ☐ The organization of the manuscript and presentation of the data and results need some improvement.
- ☐ No

Comment: n/a

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3. Recommendations:

The dissertation:

- [x] is outstanding
- [ ] should pass without the need for corrections
- [ ] should pass after minor changes (as indicated in the full report) have been made
- [ ] should pass after moderate changes (as indicated in the full report) have been made
- [ ] should not pass, but the candidate should be invited to revise and resubmit the dissertation (as indicated in the full report) after six months for reexamination
- [ ] should not pass, and the degree not be awarded

Comment:

The doctoral dissertation submitted for review is a work of 118 pages. It has a layout fairly typical for this type of work. Noteworthy is the good level of scientific achievements of the PhD student, which consists of 7 own original papers (submitted to the *Macromolecular Research*, *Journal of Macromolecular Science, Part A: Pure and Applied Chemistry*, *European Polymer Journal*, *Polymer Chemistry*, *Molecules* and *Scientific Reports*), four of which were discussed in the PhD Thesis. The total Impact Factor (*5-year Impact Factor* – IF_{5Y}) of the journals, where the papers were published is 25,5 (according to Web of Science), wherein the average IF_{5Y} value of the monothematic publications discussed in the PhD Thesis is 3,4. The works included in the doctoral dissertation were cited 15 times (without self-citations) according to the Web of Science. All these indicators testify to the good quality of the presented scientific papers, which constitute the basis for the procedure for awarding the doctoral degree in Models and Methods for Materials and Environmental Sciences, and confirm the validity of the research conducted, both in terms of science and practice. There is no doubt that the research subject of Niccolò Braidi, interesting from an experimental point of view, will ensure an increase in his bibliographic results in the future. Additionally, the Candidate actively participated in training new specialized individuals, manifested in supervising four master's theses, two of which received the 2021 and 2022 "Giorgio Squinzi" Awards by Federchimica.

The doctoral thesis presented for evaluation concerns the studies on activators regenerated by electron transfer atom transfer radical polymerization (ARGET ATRP) and post-functionalizations for bis and tris-halogen-functionalized polystyrenes obtained via this advanced polymerization technique. The novelty of the presented research is connected with the development of an advanced radical polymerization system for styrene from chlorinated initiators. This involved investigating the behavior of various reducing agent pairs leveraging the synergy between ascorbic acid (or its acetonide derivative) along with bases (both inorganic and organic). In addition to conducting reactions testing variations in the nature and quantity of reagents, he performed electrochemical and spectroscopical experiments to gain insight into the mechanisms of this base-promoted reduction. The author of the dissertation believes that the developed synthetic procedures will be used as a new class of industrial implementations. The overall originality of the concept used here is very high.

The choice of the methodology made by the PhD student should be considered as up-to-date as possible. For less than 30 years, i.e. from the time when methods of "controlled radical polymerization" were developed – and more precisely, by defining the reversible deactivation radical polymerization (RDRP) methods – systems where this idea is used are the subject of a huge number scientific publications. It is not only a matter of the current trend, as the ability to control the architecture of macromolecules opens the field to the search for polymeric materials with unique properties. Moreover, the bew methodology proposed by the PhD candidate offer the possibility of their further modification as a result of the process of introducing functional groups, the presence of which can be used for further polymerization and construction of more complex and well-defined polymer structures using selected RDRP methods.

In his work, the Candidate selected one of the most essential varieties of RDRP for research, namely the ARGET ATRP technique. The choice of this method is the most correct, taking into account the controlled nature of the polymerization (visible in the kinetic plots describing the analyzed processes) and the relatively narrow molecular weight distribution of the received polymers. In this case, thanks to the introduction of an activator regeneration system (ascorbic acid and its lipophilic derivative 5,6-isopropylidene-L-ascorbic), it was possible to significantly reduce the concentration of the catalytic copper(II) complex, and this is associated with the lack of the need to carefully remove the catalyst from the produced polymeric materials. Another advantage of this type of ATRP method that needs to be emphasized is that it avoids the need to degassing the reaction system, usually used in the classical ATRP technique.

To sum up, I believe that taking on the work in such an innovative field of knowledge as the synthesis of innovative polymer materials with the use of reversible deactivation radical polymerization, meets the criteria that a contemporary doctoral thesis should meet.

The scope of the research work performed by the PhD student and described in his dissertation meets the usual requirements for candidates for the doctoral degree. The Author well defined the main objectives, which were scientifically supported. In general, the first part of the *Results and Discussion* allows to highlight the levers that can be applied to finely tune the ARGET ATRP system. This, in order to obtain chloro- or bromo-terminated polystyrenes with predetermined MWDs. To better understand the interplay among these variations, a kinetic model was successfully developed. Since styrene was employed as the model monomer, this new system allows the formation of a homogeneous polymerization environment, enabling also to examine the base's p*K*a effect on reaction control and highlighting the influence of trace amounts of water and oxygen on the process. This system wss sufficiently robust and allows him to obtain the desired products (bis- and tris-halogen-functionalized polystyrenes) on the scale of tens of grams.

In the next stages of research (described in the second part of *Results and Discussion*) Niccolò Braidi explored the limitations in the use of these substrates, attempting, where possible, to optimize the known procedures on them. Subsequently, various post-functionalization reactions were explored to obtain polystyrenes with reactive functionalities (hydroxide, thiol, epoxide, azide, and amine). In this case, the primary goal of these studies was to expand the repertoire of feasible reactions on chloride-terminated polystyrenes, often overlooked compared

to bromide-terminated substrates. This also involves simplifying and adjusting synthetic procedures to facilitate industrial implementation. Ultimately this approach allows the synthesis of polymeric amine-terminated crosslinking agents, applicable in both conventional and dynamic networks, characterized by tunable properties (such as swelling degree and melt viscoelasticity) based on the precursor's molecular weight distribution.

In this part of the work, he used the analysis of selected signals of NMR spectra of polymers, monitoring monomer conversion as a function of polymerization time, and measurements of average molecular weights by means of gel permeation chromatography for polymer samples taken from the reactor at various conversion levels. In this part of the dissertation he showed, in my opinion, a great efficiency in the synthesis of polymers and the interpretation of the results concerning their structure. The results of the research on the course of polymerization may indicate that he managed to master the technique of controlled radical polymerization using the ARGET ATRP method.

Based on the above records, I can confidently state that the PhD candidate applied an adequate research methodology while maintaining the high quality of the experimental setup. Moreover, the quality of the obtained results is very high. Discussion and conclusions are valid and were properly supported. In my opinion, in these sections, the author's self-opinion and the discussion of the detailed result were definitely provided. The conclusions reflect an overall summary of the field with further extension and include future prospective.

The doctoral dissertation submitted for evaluation was carefully edited, I found only very few linguistic and punctuation errors. The layout of the work, as I have already mentioned, is typical for doctoral dissertations. The document organization is appropriate. The component parts of the thesis have a suitable balance. The abstract quality is high, its length is exhaustive and it was well written with prospects of the project and describes in short the concept of an advanced radical polymerization system for styrene from chlorinated initiators in the context described in the PhD thesis properties. Furthermore, this PhD thesis includes a balanced, comprehensive, and critical view of the research area (references are adequate).

I believe that the doctoral dissertation meets all the statutory criteria that should be met by a doctoral thesis in the field of Models and Methods for Materials and Environmental Sciences. Therefore, in my final conclusion, I formulate an application for accepting the doctoral dissertation and admitting Niccolò Braidi to further stages of the doctoral procedure.

EXAMINER'S NAME Prof. Paweł Chmielarz

SIGNATURE Chmielarz Paweł

DATE 03.02.2024

Please complete this summary report (in Italian or in English) and return this form, together with your full report or annotated pdf to:
dottorato.m3es@unimore.it

1.Title of the Thesis/ Name of Candidate:
- Chemometrics aided quality assessment from lab to plant in an Industry 4.0 context
- Alessandro D'Alessandro

2. Please indicate, by ticking the appropriate box, if the thesis has fulfilled the following criteria. If you do not indicate 'Yes' for any of these criteria, please give your reason(s) for doing so, either in the 'Comment' field or in your report.

2.1 Is the thesis significant and convincing?

- ☐ **Yes, as it is. X**
- ☐ Yes, but some minor revisions and clarifications are needed.
- ☐ There are major errors or gaps in the thesis but it could still become significant with major changes, revisions, and/or additional data.
- ☐ No, the thesis is not strong.

Comment:
The thesis is significant and convincing because it represents a perfect connection way between academia and company. The aim was to develop proper analytical methods to evaluate quality features of basil and pesto in the fast and effective way. It therefore faces important issues throughout innovative and sophisticated instrumental techniques and statistical approaches. It's well written and the data presentation and discussion are clear and deepened. Different chapters are well connected one each other and the entire work is harmonic. To date, the candidate already published several (5) papers on peer-reviewed scientific journals and other manuscripts are under preparation (all the published papers belong to journals from MDPI publisher).

2.2 Do the methods, data, and analysis support the conclusions?

- ☐ **Yes X**
- ☐ Mostly yes, but some further information and/or data are needed.
- ☐ No

Comment:
_____

2.3 Is the referencing appropriate?

- ☐ **Yes X**
- ☐ Mostly yes, but some additions are necessary.
- ☐ No

Comment:

_____

2.4 Is the organization/presentation of high quality?

- ☐ **Yes X**
- ☐ The organization of the manuscript and presentation of the data and results need some improvement.
- ☐ No

Comment:

_____

3. Recommendations: (Please mark the appropriate box)

In formulating a recommendation, examiners need not give equal weight to each of the criteria specified in Point 2 (above).

Greatest emphasis should be placed on the rigor and quality of the research done and obtained results, and, the candidate's ability to evaluate his/her research critically in the context of the relevant literature.

If you think that the dissertation is outstanding, please give your reason(s) for doing so, either in the 'Comment' field or in your report.

The dissertation:

- ☐ is outstanding
- ☐ **should pass without the need for corrections X**
- ☐ should pass after minor changes (as indicated in the full report) have been made
- ☐ should pass after moderate changes (as indicated in the full report) have been made
- ☐ should not pass, but the candidate should be invited to revise and resubmit the dissertation (as indicated in the full report) after six months for reexamination
- ☐ should not pass, and the degree not be awarded

Comment:

_____

EXAMINER'S NAME Eleonora Carini

SIGNATURE 

DATE March 1st, 2024

Please complete this summary report (in Italian or in English) and return this form, together with your full report or annotated pdf to:
dottorato.m3es@unimore.it

1.Title of the Thesis/ Name of Candidate: Taphonomy and deadfall ecology of Mesozoic pelagic reptiles from deep-water settings / Giovanni Serafini

---

2. Please indicate, by ticking the appropriate box, if the thesis has fulfilled the following criteria. If you do not indicate 'Yes' for any of these criteria, please give your reason(s) for doing so, either in the 'Comment' field or in your report.

2.1 Is the thesis significant and convincing?

☐ Yes, as it is.

X Yes, but some minor revisions and clarifications are needed.

☐ There are major errors or gaps in the thesis but it could still become significant with major changes, revisions, and/or additional data.
☐ No, the thesis is not strong.

Comment: See my comments on the text in the full report.

2.2 Do the methods, data, and analysis support the conclusions?

X Yes

☐ Mostly yes, but some further information and/or data are needed.
☐ No

Comment:

2.3 Is the referencing appropriate?

X Yes

☐ Mostly yes, but some additions are necessary.
☐ No

Comment:

2.4 Is the organization/presentation of high quality?

X Yes

- ☐ The organization of the manuscript and presentation of the data and results need some improvement.
- ☐ No

Comment:

_____

3. Recommendations: (Please mark the appropriate box)

In formulating a recommendation, examiners need not give equal weight to each of the criteria specified in Point 2 (above).

Greatest emphasis should be placed on the rigor and quality of the research done and obtained results, and, the candidate's ability to evaluate his/her research critically in the context of the relevant literature.

If you think that the dissertation is outstanding, please give your reason(s) for doing so, either in the 'Comment' field or in your report.

The dissertation:

- ☐ is outstanding
- ☐ should pass without the need for corrections

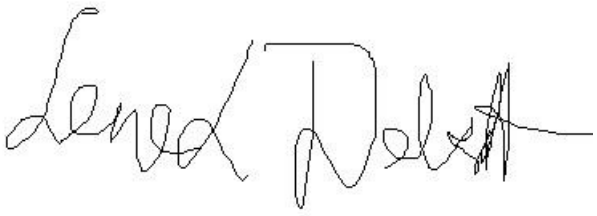
X should pass after minor changes (as indicated in the full report) have been made

- ☐ should pass after moderate changes (as indicated in the full report) have been made
- ☐ should not pass, but the candidate should be invited to revise and resubmit the dissertation (as indicated in the full report) after six months for reexamination
- ☐ should not pass, and the degree not be awarded

Comment:

_____

EXAMINER'S NAME Lene Liebe Delsett



SIGNATURE

DATE February 29th, 2024

Please complete this summary report (in Italian or in English) and return this form, together with your full report or annotated pdf to:
dottorato.m3es@unimore.it

1.Title of the Thesis/ Name of Candidate:
Taphonomy and deadfall ecology of Mesozoic pelagic reptiles from deep-water settings

2. Please indicate, by ticking the appropriate box, if the thesis has fulfilled the following criteria. If you do not indicate 'Yes' for any of these criteria, please give your reason(s) for doing so, either in the 'Comment' field or in your report.

2.1 Is the thesis significant and convincing?

- ☐ Yes, as it is.
- ☒ Yes, but some minor revisions and clarifications are needed.
- ☐ There are major errors or gaps in the thesis but it could still become significant with major changes, revisions, and/or additional data.
- ☐ No, the thesis is not strong.

Comment:
See full report and annotated PDF

2.2 Do the methods, data, and analysis support the conclusions?

- ☒ Yes
- ☐ Mostly yes, but some further information and/or data are needed.
- ☐ No

Comment:
See full report

2.3 Is the referencing appropriate?

- ☒ Yes
- ☐ Mostly yes, but some additions are necessary.
- ☐ No

Comment:
See full report

2.4 Is the organization/presentation of high quality?

- ☒ Yes
- ☐ The organization of the manuscript and presentation of the data and results need some improvement.
- ☐ No

Comment:
See full report

3. Recommendations: (Please mark the appropriate box)
In formulating a recommendation, examiners need not give equal weight to each of the criteria specified in Point 2 (above).
Greatest emphasis should be placed on the rigor and quality of the research done and obtained results, and, the candidate's ability to evaluate his/her research critically in the context of the relevant literature.
If you think that the dissertation is outstanding, please give your reason(s) for doing so, either in the 'Comment' field or in your report.

The dissertation:

- [X] is outstanding
- [ ] should pass without the need for corrections
- [ ] should pass after minor changes (as indicated in the full report) have been made
- [ ] should pass after moderate changes (as indicated in the full report) have been made
- [ ] should not pass, but the candidate should be invited to revise and resubmit the dissertation (as indicated in the full report) after six months for reexamination
- [ ] should not pass, and the degree not be awarded

Comment:
The thesis is outstanding, despite small corrections reported in the full report and in the annotated pdf

EXAMINER'S NAME Giovanni Bianucci

SIGNATURE 

DATE 25/02/2024

UNIVERSITÀ DEGLI STUDI DI BOLOGNA
DIPARTIMENTO DI CHIMICA INDUSTRIALE "TOSO MONTANARI"
VIALE DEL RISORGIMENTO, 4 – 40136 BOLOGNA (ITALIA)
PROF. MASSIMILIANO LANZI
Tel. +39-051-2093689 E-mail: massimiliano.lanzi@unibo.it

Bologna, 05 february 2024

To the attention of:

Ufficio Dottorato – UNIMORE

dottorato.m3es@unimore.it

Object: PhD thesis report of BRAIDI Niccolò

The candidate for the final Ph.D. exam, Dr. Niccolò Braidi, presented a thesis of excellent scientific level, perfectly organized and based on rigorous analyses that allowed to fully confirm the statements deduced from the observations highlighted in the experimental parts. By virtue of this and the excellent English language, my opinion on his final thesis is: excellent.

Sincerely yours

Please complete this summary report (in Italian or in English) and return this form, together with your full report or annotated pdf to:
dottorato.m3es@unimore.it

1.Title of the Thesis/ Name of Candidate:__ Scalable ARGET ATRP of styrene: studies on crosslinking and post-functionalization
Niccolò Braidi

2. Please indicate, by ticking the appropriate box, if the thesis has fulfilled the following criteria. If you do not indicate 'Yes' for any of these criteria, please give your reason(s) for doing so, either in the 'Comment' field or in your report.

2.1 Is the thesis significant and convincing?

Yes, as it is.
X Yes, but some minor revisions and clarifications are needed.
☐ There are major errors or gaps in the thesis but it could still become significant with major changes, revisions, and/or additional data.
☐ No, the thesis is not strong.

Comment: ___Some minor points should be clarified; see the annotated pdf enclosed

2.2 Do the methods, data, and analysis support the conclusions?

X Yes
☐ Mostly yes, but some further information and/or data are needed.
☐ No

Comment:
_____

2.3 Is the referencing appropriate?

X Yes
☐ Mostly yes, but some additions are necessary.
☐ No

Comment:
_____

2.4 Is the organization/presentation of high quality?

X Yes
☐ The organization of the manuscript and presentation of the data and results need some improvement.
☐ No

Comment:
_____

3. Recommendations: (Please mark the appropriate box)
In formulating a recommendation, examiners need not give equal weight to each of the criteria specified in Point 2 (above).
Greatest emphasis should be placed on the rigor and quality of the research done and obtained results, and, the candidate's ability to evaluate his/her research critically in the context of the relevant literature.
If you think that the dissertation is outstanding, please give your reason(s) for doing so, either in the 'Comment' field or in your report.

The dissertation:

- X is outstanding
- ☐ should pass without the need for corrections
- ☐ should pass after minor changes (as indicated in the full report) have been made
- ☐ should pass after moderate changes (as indicated in the full report) have been made
- ☐ should not pass, but the candidate should be invited to revise and resubmit the dissertation (as indicated in the full report) after six months for reexamination
- ☐ should not pass, and the degree not be awarded

Comment: See the report enclosed___

EXAMINER'S NAME Prof. Massimiliano Lanzi, Dept. Of Industrial Chemistry "Toso Montanari", University of Bologna, Italy

SIGNATURE

DATE 05/02/2024

Please complete this summary report (in Italian or in English) and return this form, together with your full report or annotated pdf to:
dottorato.m3es@unimore.it

1.Title of the Thesis/ Name of Candidate:

Inside Tardigrada's apomorphy: composition, morphofunctional adaptation, and evolution of their cuticular-derived structures / Edoardo Massa

2. Please indicate, by ticking the appropriate box, if the thesis has fulfilled the following criteria. If you do not indicate 'Yes' for any of these criteria, please give your reason(s) for doing so, either in the 'Comment' field or in your report.

2.1 Is the thesis significant and convincing?

- ☐ Yes, as it is.
- ☐ Yes, but some minor revisions and clarifications are needed.
- ☒ There are major errors or gaps in the thesis but it could still become significant with major changes, revisions, and/or additional data.
- ☐ No, the thesis is not strong.

Comment:

This comment is only related to chapter 8. Otherwise, the dissertation is very strong and only requires very minor revision.

2.2 Do the methods, data, and analysis support the conclusions?

- ☐ Yes
- ☒ Mostly yes, but some further information and/or data are needed.
- ☐ No

Comment:

Again, this is only related to chapter 8. The rest of the dissertation is very strong.

2.3 Is the referencing appropriate?

- ☒ Yes
- ☐ Mostly yes, but some additions are necessary.
- ☐ No

Comment:

2.4 Is the organization/presentation of high quality?

- ☒ Yes
- ☐ The organization of the manuscript and presentation of the data and results need some improvement.
- ☐ No

Comment:

_____

3. Recommendations: (Please mark the appropriate box)

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- ☐ should not pass, and the degree not be awarded

Comment:

_____

EXAMINER'S NAME Frank W. Smith

SIGNATURE 

DATE March 1, 2024