

REP. N. 66/2024 Prot. 2780

DATE: 29/11/2024

THE ENGLISH LANGUAGE TRANSLATION OF THE CALL DOES NOT HAVE LEGAL VALUE IN ITSELF, THEREFORE DOES NOT SUPERSEDE THE ITALIAN VERSION OF THE CALL (BANDO).

The integral version is available at the following links:

<http://host.uniroma3.it/uffici/ricerca/assegni-di-ricerca.aspx>

Art.1

Pursuant to the [Regolamento di Ateneo per gli assegni di ricerca](#), a public selection process is established to award ONE grant for temporary research fellowship (“*assegno di ricerca*”) for a period of 12 (twelve) months in the Department of Industrial, Electronic and Mechanical Engineering

EXTRUSION, MOLDING AND FOAMING OF ECO-FRIENDLY POLYMERIC MATERIALS: DESIGN, EXPERIMENTAL ANALYSIS AND PROCESSING.

The foaming process of polymeric materials is of enormous industrial importance. In 2020, the foamed polystyrene (PS) used in Italy amounted to 116 kton. Of these, about 50 kton are used in packaging and, in particular, 38 kton in pre-formed food packaging. These are enormous volumes due to the low density of the foams (up to 1/20 of the nominal value). The use of foamed PS generates many concerns due to the scarce possibility of recovery at the end of its life cycle. The EC directive 904/2019 has severely limited, if not prohibited, the use of foamed PS in the packaging sector. It is therefore essential to study alternatives that combine the performance of the PS with a reduced environmental footprint. The products in expanded polyethylene terephthalate (PET) reduce the risks to the environment as they can be effectively sent for recycling at the end of their life. However, the PET foaming process is very complex, as it, in the molten state, does not possess suitable rheology. PET has low viscosity, high degradation rate, poor melt strength and elasticity. This determines the need to modify the rheology of PET with complex reactive extrusion processes with chain extenders, with unpredictable results. Furthermore, PET is largely produced with raw materials from non-renewable sources, thus presenting no possible alternatives to recycling for end-of-life management. Polybutylene adipate-co-terephthalate (PBAT) and polybutylene succinate-co-terephthalate (PBST) are biodegradable polyesters, obtainable with raw material from renewable sources. These materials are used in the manufacture of biocompostable blends suitable for the production of packaging, often in conjunction with thermoplastic starch (TPS). It is interesting to study the use of the aforementioned materials for the production of foams intended for the manufacture of preforms for the food packaging industry. It would be possible to obtain compostable foams, as well as recyclable, simplifying the management of the end of life. Furthermore, by developing PBAT and/or PBST-based foams with TPS it would be possible to partially or completely use raw materials from renewable sources. However, PBAT and PBST also have a rheology that is not functional to the foaming process. As polyesters, they have many features in common with PET that make managing the foaming process very complex. Therefore, the research project aims to demonstrate the manufacturing process of foams in PBAT, PBST and their blends with TPS by acting on the design of materials, on the modification of the rheology of resins by reactive extrusion, on the prototyping of foamed items on a laboratory scale, on the validation of the functional properties of such items. A comparative study of the life cycle of the foams obtained with respect to the corresponding foams in PET and PS will complete the research action.

EXPERIMENTAL ANALYSES, STUDI ELABORATION OF THE EXPERIMENTAL RESULTS, WRITING OF SCIENTIFIC REPORTS

GROSS AMOUNT (paid in monthly installments), comprehensive of all fees due by the Administration): € 27.511,68

The allowances is subjected to:

- the provisions of the article 4 of Law 08/13/1984, n. 476 (fiscal treatment);
- the provisions of the article 2, paragraphs 26 and following of the law 08/08/1995, n. 335, as further amended (social security);
- the provisions of the article 1, paragraph 788, of Law 27/12/2006, n. 296, as further amended (sick leave);
- the provisions of the Decree of the Minister of Labour and Social Welfare 12/07/2007, published in Official Gazette no. 247 of 23/10/2007 (maternity).

Apart from the cases provided for and regulated by the above provisions, is possible to suspend the research activity for a pre-determined number of months. Suspension is given by the Board of the Department; at the end of the suspension the “*assegno di ricerca*” will resume or will be permanently stopped.

In all cases of suspension the payment is immediately interrupted until the date of resumption of the activities, certified by the Director of the Department.

In the case of anticipate conclusion of the research activity, the monthly installment will be paid proportionally.

Art.2

To participate in selection it is mandatory to have gained:

- Master's Degree in Engineering or equivalent qualification

If the Master's Degree in Engineering was obtained abroad, the course must be declared equivalent, for selection purposes only, by the Academic Senate of the University.

The candidate must possess the required qualification within the deadline referred to in paragraph 3, under penalty of exclusion

Art. 3

The signed and dated application form, compiled following the scheme available at the end of this Call (**ALLEGATO A**) must be sent by e-mail at : ricerca.diiem@uniroma3.it or PEC: ricerca.ingegneria.iem@ateneo.uniroma3.it; and HAVE TO ARRIVE within the final deadline of **17/12/2024 or 12:00 am**, otherwise the applicant will be excluded.

Application must include:

- **appropriate scientific and professional curriculum demonstrating aptitude for research activities;**
- **autocertification for the Degrees (**ALLEGATO B**);**
- (if any) **list of other titles and or previous scientific publication (**ALLEGATO C**)**
- **Copy of a valid passport**

Art. 4

The Commission will define the criteria of the selection before proceeding with the evaluation.

The selection process consists of two different phases:

- 1) the evaluation of the candidate profile based on titles, CV and any other provided documentation;
- 2) an oral interview;

Art. 5

1. The research grant cannot be awarded to students enrolled in undergraduate, Master, or medical specialization in Italy or abroad, and involves placement on unpaid leave for employee in service with public administrations other than those referred to in point .3 below.

2. Participation in selection is not allowed for spouses, relatives and kin up to and including the 4th degree of the:

- teaching staff of the Department which has issued this notice;
- Rector;
- General Director;
- Members of the Board of Directors.

3. Permanent employees of Universities, research and experimentation institutes or public bodies, the National Institute for New Technologies, Energy and Sustainable Economic Development (ENEA), the Italian Space Agency (ASI) and institutions whose scientific specialization qualifications have been recognized as equivalent to a Ph.D. pursuant to article 74, fourth paragraph, of Presidential Decree no. 382 of 11 July 1980, cannot participate in selection.

4. The research grant cannot be combined with any scholarships, except those awarded by national or foreign institutes to supplement research activities of said temporary research fellows with permanence abroad.

5. The grant for carrying out research activities is governed by a specific individual contract, based on the following criteria: flexibility in meeting the needs of the activity, continuity, time allocation (not sporadic), coordination with the overall activities of the Department, close relationship with the implementation of a research program, autonomous activity within the scope of the program and absence of pre-determined working hours.

Art. 6

For anything not exposed here must be considered laws and rules regarding the “*assegni di ricerca*”.

Any other information can be found on: <http://host.uniroma3.it/uffici/ricerca/assegni-di-ricerca.aspx>

Rome, 29/11/2024

IL DIRETTORE DEL DIPARTIMENTO

REP. N. 66/2024 Prot. 2780 Signed *Prof. Salvatore Andrea Sciuto*

THIS DOCUMENT CONFORMS TO THE ORIGINAL PRESERVED IN THE ARCHIVES OF THE DEPARTMENT

ALLEGATO A

APPLICATION FORM

Al Direttore del Dipartimento di Ingegneria Industriale, Elettronica e Meccanica
dell'Università degli Studi Roma Tre

Il sottoscritto (name and surname)
nato a (born in) (.....) il (date)/...../.....,
residente in (city-nation of residence) –
Via (address)
Tel. Mobile. E-mail

CHIEDE

di partecipare al concorso pubblico per l'attribuzione dell'assegno relativo al programma di ricerca dal titolo

“EXTRUSION, MOLDING AND FOAMING OF ECO-FRIENDLY POLYMERIC MATERIALS: DESIGN,
EXPERIMENTAL ANALYSIS AND PROCESSING” REP. N. 66/2024 Prot. 2780 da svolgersi presso il Dipartimento
di Ingegneria Industriale, Elettronica e Meccanica

DICHIARA SOTTO LA PROPRIA RESPONSABILITÀ:

- 1) di essere cittadino (citizenship);
- 2) (MASTER OF) di possedere la laurea in e di averla conseguita in data
(date) presso l'Università (University) di con la votazione (final
grades) di
- 3) di non usufruire (o di impegnarsi a rinunciare qualora risultasse vincitore) di altre borse di studio a qualsiasi titolo conferite
(con l'eccezione di quelle concesse da istituzioni nazionali o straniere utili ad integrare, con soggiorni all'estero, l'attività di
ricerca) o di altro assegno di ricerca;
- 4) di non avere già usufruito di assegni di ricerca ex L. 240/2010 per un periodo complessivo superiore a 60 mesi;
- 5) di non essere dipendente di ruolo presso le Università, gli Osservatori Astronomici, Astrofisici e Vesuviani, gli Enti pubblici
e le Istituzioni di ricerca di cui all'art. 8 del D.P.C.M. 30.12.93, n.593 e successive modificazioni e integrazioni, l'ENEA e
l'ASI.
- 6) di non avere un grado di parentela o di affinità, fino al quarto grado compreso, con un professore appartenente al
Dipartimento presso cui sarà svolto l'assegno ovvero con il Rettore, il Direttore Generale o un componente del Consiglio di
Amministrazione dell'Ateneo.
- 7) di essere a conoscenza di tutte le norme contenute nel bando di concorso;
- 8) di impegnarsi a comunicare tempestivamente ogni eventuale cambiamento della propria residenza o del recapito.

Allega alla presente:

autocertificazione relativa alla laurea, con l'indicazione del titolo della tesi discussa e della votazione ottenuta in sede di esame di laurea.
In caso di laurea ottenuta all'estero il titolo dovrà essere corredato dell'opportuna equivalenza o dovrà essere sottoposto al Consiglio di
Dipartimento per il riconoscimento ai soli fini concorsuali – **ALLEGATO B**;
copia delle pubblicazioni e degli eventuali altri titoli ritenuti utili per il giudizio della Commissione;
dettagliato curriculum scientifico-professionale da cui risulti l'idoneità all'attività di ricerca da svolgersi.

Il/la sottoscritto/a autorizza l'Università degli Studi Roma Tre al trattamento dei dati personali, nel rispetto del D.lgs. n. 196 del 30/06/03.

Date, _____

(Signature)

ALLEGATO B

AUTOCERTIFICATION FOR THE DEGREES

(DPR 28/12/2000, n° 445 "Testo Unico delle disposizioni legislative e regolamentari in materia di documentazione amministrativa")

Il sottoscritto (name and surname)
nato a (born in) (.....) il (date)/...../.....,
residente in (city-nation of residence) –
Via (address)
Tel. Mobile. E-mail

DICHIARA (OBBLIGATORIO)

Ib. di aver conseguito la **LAUREA (MASTER OF)**
in.....
in data ____/____/____ c/o l'Università.....
rilasciata dalla Facoltà....., con la votazione di ____/____ (barrare in caso di LODE)

Il/la sottoscritto/a autorizza l'Università degli Studi Roma Tre al trattamento dei dati personali, nel rispetto del D.Lgs. n. 196 del 30/06/03.

Date,

.....
(Signature)

ALLEGARE FOTOCOPIA DI UN DOCUMENTO DI IDENTITA' (fronte - retro)

an ID card (or passport) MUST be enclosed

ALLEGATO C

LIST OF OTHER TITLES OR PREVIOUS SCIENTIFIC PUBLICATION

(DPR 28/12/2000, n° 445 "Testo Unico delle disposizioni legislative e regolamentari in materia di documentazione amministrativa")

Il sottoscritto (name and surname)
nato a (born in) (.....) il (date)/...../.....,
residente in (city-nation of residence) –
Via (address)
Tel. Mobile. E-mail

DICHIARA CHE SONO PIENAMENTE CONFORMI AGLI ORIGINALI

le allegate copie dei seguenti titoli (**OTHER TITLES - that must be enclosed to the form**)

- a)
- b)
- c)
- d)
- e)
- f)
- g)
- h)
- i)
- j)

nonché le allegate copie delle seguenti pubblicazioni (**SCIENTIFIC PUBLICATIONS - that must be enclosed to the form**)

- a)
- b)
- c)
- d)
- e)
- f)
- g)
- h)
- i)
- j)
- k)
- l)
- m)
- n)

Il/la sottoscritto/a autorizza l'Università degli Studi Roma Tre al trattamento dei dati personali, nel rispetto del D.Lgs. n. 196 del 30/06/03.

Date, _____

(Signature)