



सत्यमेव जयते

## INDIA NON JUDICIAL

### Government of Karnataka

#### e-Stamp

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| Description               | : M O U                                      |
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| First Party               | : MANGALORE UNIVERSITY                       |
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This Non Judicial e- Stamp form an integral part of the MoU dated 09.08.2019 entered into between Mangalore University, Mangalagangotri, Konaje and NITTE (Deemed to be University), Deralakatte Mangalore.

*[Signature]*  
Registrar  
MANGALORE UNIVERSITY  
MANGALAGANGOTRI - 574 199



*[Signature]*  
Registrar  
NITTE  
(Deemed to be University)

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## MEMORANDUM OF UNDERSTANDING

### BETWEEN

MANGALORE UNIVERSITY, MANGALAGANGOTRI, KARNATAKA  
AND

**NITTE (DEEMED TO BE UNIVERSITY), DERALAKATTE, KARNATAKA**

This Memorandum of Understanding (MoU) made on this 9<sup>th</sup> day of August 2019 between Mangalore University, Mangalagangotri-574199, Karnataka, India (hereinafter referred to as Mangalore University - 1<sup>st</sup> party) and NITTE Deemed To Be University, Deralakatte – 575018, Karnataka, India (hereinafter referred to as NITTE - 2<sup>nd</sup> party) witnessed as follows:

### PREAMBLE

- (a) Mangalore University is one of the prominent public sector University promoting higher education and research activities in India, which is coming under the ambit of Government of Karnataka. At present, Mangalore University is successfully offering and running 39 post-graduate courses in science, commerce and arts, and is conducting research programmes in all these areas. Mangalore University is accredited by NAAC with grade “A”.
- (b) NITTE is an esteemed Deemed To Be University in India which was established in the year 2008 under section 3 of UGC Act 1956. It has been providing education in the field of medical dental and related fields. Medical treatment is also provided/facilitated to needy people by NITTE through Justice K S Hegde Charitable Hospital and its centres. It is accredited by NAAC with grade “A” and also ranked as A category deemed University by MHRD- Govt. of India.
- (c) In addition to the on-going courses, Mangalore University has started new post-graduate course in Medical Physics from academic year 2018-19. This proposed course needs infrastructural facilities and professional expertise available in NITTE for conducting internship and training programme of M.Sc. in Medical Physics and research students
- (d) Whereas NITTE is also interested in initiating teaching, research and related programmes in collaboration with Mangalore University. Therefore, to establish a mutually beneficial relationship built on academic and scientific cooperation, Mangalore University and NITTE wish to promote collaboration between the two Universities in education, training, research and related aspects through this MoU.

### The Memorandum of Understanding (MoU) establishes the following:

- I. **Scope of MoU:** To establish a mutually beneficial relationship built on academic, scientific and research co-operation between Mangalore University and NITTE.
- II. **Period of MoU and its extension:** This MoU becomes effective from 09.08.2019 and will continue for an initial period of Five years up to 08.08.2024, whereupon it shall be reviewed and it may be extended by a mutual written agreement of both parties, if required. This MoU may be revised through the mutual agreement of both parties. This MoU may be terminated by either party upon giving six months written notice with reasons for termination and be signed by the authorised representative of the notifying party. In case of termination, the on-going internship/training etc. programmes of the students shall not be affected and students shall be allowed to continue and complete their internship/training which may be agreed under this MoU for the specified time on payment for utilising training/ teaching/equipments laboratory facilities of either parties as per the norms of respective institutes.

  
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MANGALORE UNIVERSITY  
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**III. Areas of collaboration :** Collaboration between the two institutions may be established within any field related to academic, scientific, research, science and technological co-operation of mutual interest, and in particular:

- (a) Mutual co-operation and participation in teaching and training programmes conducted by both the institutes.
- (b) Using facilities available with both institutions for each other's students training and conducting practical classes.
- (c) Providing internship placement for M. Sc. in Medical Physics students of Mangalore University in institutions of NITTE.
- (d) Training of doctoral student and extension of each other's facilities for research.
- (e) Developing and conducting collaborative research programmes using each other's infrastructure and expertise.
- (f) Exchange of information, including the results of teaching and research collaboration within the rules and regulations of both the parties with mutual consent.
- (g) Facilitating rural/community health centres to the needy people, as per the mutually agreed terms & conditions of both parties.
- (h) Utilization of Gamma radiation facilities of Mangalore University by NITTE for the purpose of end sterilisation of tissue bank products in Prof M Shantharam Shetty Tissue Bank, Justice K S Hegde Charitable Hospital.
- (i) Any other areas of academic, scientific & research cooperation as mutually agreed upon by both parties.
- (j) The themes of joint activities, the conditions for utilizing the results of research, the arrangements of specific visits, exchanges, internships, knowledge partnering & other forms of activities shall be discussed & developed upon mutual consent of both parties.
- (k) Extension to other areas, if any will be considered and made through appropriate amendments to the present MoU.

**IV. Exchange of facilities/scientists/experts/faculty:**

- (a) Mangalagangothri and NITTE may participate in each other's teaching and training programmes upon mutual consent of both parties.
- (b) Both parties may extend its research & laboratory facilities to scientists/experts/faculty/students of NITTE and Mangalore University upon mutual consent of both parties.
- (c) Charges for using the research facilities/equipment, if any will be same as that of the charges collected from the researchers/faculty of respective institutions.
- (d) Remuneration for taking theory and practical classes for post-graduate/research students will be paid to experts/faculty by respective institutions as per their institutional norms.
- (e) Expenditure towards repairing damaged equipment will be borne by the person/institution responsible for damaging the same.
- (f) Both parties may agree to seek funds/financial support for collaborative research programmes from appropriate funding agencies upon mutual consent of both parties.

**V. Intellectual property rights** Information on research results and scientific materials (reports, articles, books) will be exchanged freely keeping in mind the mutually agreed provision of Intellectual Property Rights. All intellectual property solely conceived and/or developed by Mangalore University during the course of this agreement shall be owned by Mangalore University. All intellectual property solely conceived and/or developed by NITTE during the course of this agreement shall be owned by NITTE. Intellectual property jointly conceived and/or developed by Mangalore University and NITTE will be jointly owned by Mangalore University and NITTE. Each party may use such property for research and scholarly purposes with prior information to other party and with their consent. Mangalore University and NITTE agree to collaborate towards the protection, if appropriate, and application of such intellectual property rights for commercial or other purposes on mutually acceptable terms to be negotiated in good faith between the parties.

  
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- VI. Confidentiality:** During the tenure of the MoU both parties shall maintain strict confidentiality and prevent disclosure of all the information and data exchanged under the scope of this MoU for any purpose other than in accordance with this MoU. Both parties shall bind their respective personnel who come into possession or knowledge of any confidential information not to disclose the same to third parties without written approval of the disclosing party or use such confidential information for any use other than intended under this agreement. Further both Mangalore University and NITTE shall put in place adequate and reasonable measures to keep and store confidential information secure so as to prevent any unauthorized use. If required, Parties may enter into separate confidentiality agreements as per the requirements of specific or respective projects/programmes under this MoU.
- VII. Research Publications:** Research publications, arising out of collaborative research work shall be in the names of the investigators from both parties, with prior mutual consent of both parties. It will be suitably acknowledged that the work has been carried out jointly under the aegis of corresponding funding agencies.
- VIII. Relationship between the Parties:** This Memorandum of Understanding (MoU) is intended solely as a MoU and no partnership, joint venture, employment agency, franchise, or other form of agreement or relationship is intended. It is specifically understood between the Parties that the relationship between the parties contemplated under this MoU is strictly on principal to principal basis. Nothing in this MoU shall be construed to the employees/representatives/students of one Party to be construed as the employees/representatives /students of the other party. However both parties shall ensure the following:
- Both Parties shall see to it that the respective students and employees engaged under this MoU shall strictly follow the disciplinary protocols and be professional in their conduct towards each other.
  - Both Parties shall see to it that "Safety and Security" of the respective employees /students engaged under this MoU be ensured.
- IX. Law of the Land :** Both parties hereby agree and undertake to abide and confirm with the respective law of the land, and, terms and conditions of the agreements which might be entered upon under this MoU. Licenses/Approval/s or / clearance/s from statutory authorities (like Institution Ethics Committee- IEC, Animal Ethics Committee, CTRI, ICMR etc) if any, shall be obtained by the respective parties where ever applicable.
- X. MoU and its amendments:** This MoU shall be the sole repository of terms and conditions agreed between the parties and no amendments thereof shall take effect or be binding on Mangalore University and NITTE unless such amendment is mutually agreed by both the parties and is recorded in writing and signed by the authorised representatives of both the parties.
- XI. Resolution of disputes:** Any dispute or difference arising between parties shall be resolved bilaterally by the VICE CHANCELLOR, MANGALORE UNIVERSITY & VICE CHANCELLOR, NITTE (Deemed To Be University). The decision so arrived on it shall be final and binding on both parties of this MoU.

For any unresolved disputes, reference shall be made under the provisions of the Arbitration and conciliation Act, 1996 or any statutory modification/ re-enactment thereof and rules made thereunder. The place of arbitration shall be Mangalore and the proceedings shall be conducted in English Language. The arbitration committee shall consist of 3 members. The Registrar, Mangalore university or his nominee will be the first Arbitrator, the Registrar, NITTE (Deemed to be University) Deralakatte, Mangalore or his nominee shall be the second Arbitrator and a third person a professional Arbitrator will conduct the proceedings. The award of the arbitrator/ arbitrators shall be binding on both the parties. The expenses incurred shall be borne by both the parties equally.

  
Registrar  
MANGALORE UNIVERSITY<sup>3</sup>  
MANGALAGANGOTRI - 574 199



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Registrar  
NITTE  
(Deemed to be University)

This MoU is made in three originals (Mangalore University keeps two originals and NITTE will keep one original).

In witness whereof the parties hereto have executed this MoU or caused it to be Executed in their names and on their behalf by their duly authorised representatives on the date set forth.

For and on behalf of  
Mangalore University

For and on behalf of  
NITTE (Deemed-to-be University)



DR. A. M. KHAN  
REGISTRAR

Registrar  
MANGALORE UNIVERSITY  
MANGALAGANGOTRI - 574 199



DR. ALKA KULKARNI  
REGISTRAR

Registrar  
NITTE  
(Deemed to be University)

Witness 1

Signature:



Name: Nithya Chathan.

Designation: Officer - legal & HR

Address: NITTE (Deemed to be University)  
Derebattur, Mangalore.

Witness 2

Signature:



Name: DR. H. M. SOMASHEKARAPPA

Designation: PROFESSOR

Address:

COORDINATOR  
MEDICAL PHYSICS DIVISION  
MANGALORE UNIVERSITY

## Current Perspectives on Chemical Sciences Vol. 9

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### Swelling Studies of PVA/Gelatin Hydrogels Synthesized Using Gamma Irradiation Technique

K. Swaroop; L. P. Shrikant; H. M. Sonashekharappa

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575018, Karnataka, India.

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#### Abstract

In the present investigation, an attempt was made to synthesise different compositions of PVA/gelatin hydrogels by gamma irradiation technique. A mixture of PVA and gelatin aqueous solutions of similar concentration at different weight ratios namely; 100/0, 75/25, 50/50, 25/75, and 0/100 respectively and exposed to gamma irradiation dose of 25 kGy. Further, the prepared sample were analysed for structural and morphological characteristics using powder XRD and FESEM analysis respectively. Significant changes in the structural and morphological characteristics were observed for different PVA and gelatin concentration. The swelling studies were carried out at different pH values and the swelling data was fitted to power law expression to know the swelling mechanism of the PVA/gelatin hydrogels. The swelling characteristics of PVA/gelatin hydrogels found to increase with gelatin percentage. The PVA/gelatin hydrogels of different concentrations exhibited better swelling ability with tailored functionalities making them a better material for various biomedical applications. The overall result obtained signifies that the PVA/gelatin hydrogels could be used for various biomedical applications such as wound dressing and drug delivery systems.

**Keywords:** Hydrogels; gamma irradiation; XRD; FESEM; Swelling

<https://doi.org/10.9734/bpi/cpcs/v9/7640D>