

Curriculum Vitae



Name: Nahideh

Surname: Gharehaghaji

Field of study: Medical Physics

Academic degree: Professor

Address: Department of Radiology, Faculty of Allied Medical Sciences, Tabriz University of Medical Sciences, Tabriz, Iran

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Educations:

Ph.D: Medical Physics - Tehran University of Medical Sciences

MSc: Medical Physics - Mashhad University of Medical Sciences

BSc: Technology of Radiology - Tabriz University of Medical Sciences

Theses:

MSc thesis: Calculation of organ and effective doses in conventional radiographies

PhD thesis: Evaluation of effective parameters on optimum contrast of MR imaging using superparamagnetic iron oxide nanoparticles

Research interests:

1. Application of nanostructures in different imaging modalities (MRI, CT and fluorescent imaging)

2. *Bimodal imaging*
 3. *Multifunctional nanoprobe*s
 4. *Nanoshields*
 5. *Gel dosimetry*
 6. *Radiation dosimetry and protection in radiology*
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Publications:

1. Divband B, **Gharehaghaji N***, Atashi Z. High Transverse Relaxivity and Anticancer Agent Loading/Release Characteristics of Porous Calcium Phosphate Coated Iron Oxide Nanoparticles. *Biointerface Research in Applied Chemistry*. 2021; 11(3): 10402-11.
2. **Gharehaghaji N**, Divband B, Bakhtiari-Asl F. Utilization of Innovative Hydroxyapatite-Coated Gd₂O₃@Bi₂O₃ Nanocomposite as a Bifunctional Material for Magnetic Resonance Imaging and Computed Tomography. *BioNanoScience*. 2020; 10(4):909-16.
3. Estak K, Mohammadzadeh M, **Gharehaghaji N**, Mortezaazadeh T, Khatyal R, Khezerloo D. Optimisation of CT scan parameters to increase the accuracy of gross tumour volume identification in brain radiotherapy. *Journal of Radiotherapy in Practice*. 2020; 1-5.
4. Divband B, **Gharehaghaji N***, Takhiri M. Effect of Neodymium Doping on MRI Relaxivity of Gadolinium Oxide Nanoparticles. *Journal of Biomedical Physics & Engineering*. 2020; 10(5):589.
5. Ghaderi S, Divband B, **Gharehaghaji N***. Magnetic resonance imaging property of doxorubicin-loaded gadolinium/13X zeolite/folic acid nanocomposite. *Journal of Biomedical Physics & Engineering*. 2020; 10(1):103-10.
6. Bakhtiari-Asl F, Divband B, Mesbahi A, **Gharehaghaji N***. Bimodal magnetic resonance imaging-computed tomography nanoprobe: A Review. *Nanomedicine Journal*. 2020; 7(1):1-12.

7. Badrigilan S, Shaabani B, **Gharehaghaji N**, Mesbahi A. Graphene quantum dots-coated bismuth nanoparticles for improved CT imaging and photothermal performance. *International Journal of Nanoscience*. 2020; 19(01):1850043.
8. Badrigilan S, Shaabani B, **Gharehaghaji N**, Mesbahi A. Iron oxide/bismuth oxide nanocomposites coated by graphene quantum dots: “Three-in-one” theranostic agents for simultaneous CT/MR imaging-guided in vitro photothermal therapy. *Photodiagnosis and photodynamic therapy*. 2019; 25:504-14.
9. **Gharehaghaji N**, Divband B, Atashi Z. Analytical study of effect of bilayer inorganic and organic coatings around the iron oxide nanoparticles on magnetic resonance imaging contrast. *Urmia Medical Journal*. 2019; 30(8):597-608 (Persian).
10. Shafaei E, Divband B, **Gharehaghaji N***. Relevance between MRI longitudinal relaxation rate and gadolinium concentration in Gd^{3+} /GO/alginate nanocomposite. *Nanomedicine Journal*. 2019; 6(4):263-8.
11. Asgari M, Divband B, **Gharehaghaji N***. Signal suppressions of grape syrup and grape syrup/lemon aqueous solutions in magnetic resonance cholangiopancreatography using heavily T2-weighted pulse sequence. *Polish Journal of Medical Physics and Engineering*. 2019; 25(3):149-54.
12. Zeini M, Divband B, Khezerloo D, **Gharehaghaji N***. Biomedical applications of bismuth oxide based nanocomposite: computed tomography and anticancer drug loading. *Biointerface Research in Applied Chemistry*, 2019; 9(4):4101-6.
13. **Gharehaghaji N**, Khezerloo D, Abbasiazar T. Image quality assessment of the digital radiography units in Tabriz, Iran: a phantom study. *Journal of medical signals and sensors*. 2019; 9(2):137-42.
14. Zareei L, Divband B, Mesbahi A, Khatamian M, Kiani A, **Gharehaghaji N***. A new potential contrast agent for magnetic resonance imaging: iron oxide-4A nanocomposite. *Journal of biomedical physics & engineering*. 2019; 9(2):211-16.

15. Farshi RG, Mesbahi A, Johari M, Kara Ü, **Gharehaghaji N***. Dosimetry of Critical Organs in Maxillofacial Imaging with Cone-beam Computed Tomography. *Journal of biomedical physics & engineering*. 2019; 9(1):51-60.
16. **Gharehaghaji N**, Divband B, Zareei L. Nanoparticulate NaA zeolite composites for MRI: Effect of iron oxide content on image contrast. *Journal of Magnetism and Magnetic Materials*. 2018; 456:136-41.
17. **Gharehaghaji N**, Divband B. A novel MRI contrast agent synthesized by ion exchange method. *Nanomedicine Journal*. 2018; 5(1):15-8.
18. Divband B, Rashidi MR, Khatamian M, Eslamian GK, **Gharehaghaji N**, Tabriz FD. Linde type A and nano magnetite/NaA zeolites: cytotoxicity and doxorubicin loading efficiency. *Open Chemistry*. 2018; 16(1):21-8.
19. Ghavami SM, **Gharehaghaji N***, Azabdaftari F. A Case Report of Secondary Infertility Due to Retained Surgical Gauze. *Qom University of Medical Sciences Journal*. 2018; 12(1):99-103 (Persian).
20. Zeinali R, Keshtkar A, Zamani A, **Gharehaghaji N**. Brain volume estimation enhancement by morphological image processing tools. *Journal of biomedical physics & engineering*. 2017; 7(4):379-88.
21. Atashi Z, Divband B, Keshtkar A, Khatamian M, Farahmand-Zahed F, Nazarlo AK, **Gharehaghaji N***. Synthesis of cytocompatible Fe₃O₄@ ZSM-5 nanocomposite as magnetic resonance imaging contrast agent. *Journal of Magnetism and Magnetic Materials*. 2017; 438:46-51.
22. Hossein Pourfeizi H, Ghavami SM, **Gharehaghaji N**. Osteoid Osteoma in the Coccyx: A Case Report. *Journal of Mazandaran University of Medical Sciences*. 2017; 26(145):403-7 (Persian).
23. Ghavami SM, **Gharehaghaji N***. An analysis of the findings of hysterosalpingography on 1260 cases in Tabriz. 2016; 4(5):1-6 (Persian).
24. Ghavami SM, Abedinzadeh R, **Gharehaghaji N**. Huge Fetal Cervical Teratoma: A Case Report. *Journal of Mazandaran University of Medical Sciences*. 2016; 26(137): 211-6 (Persian).

25. Ghavami SM, Abedinzadeh R, **Gharehaghaji N**. Fetal Gallstones: A Case Report. *Journal of Mazandaran University of Medical Sciences*. 2015; 25(129): 153-7 (Persian).
26. **Gharehaghaji N**, Nazarpoor M, Saharkhiz H. Effect of Flip Angle on the Correlation between Signal Intensity and Different Concentrations of Iron Oxide Nanoparticles Using T1-Weighted Turbo-FLASH Inversion Recovery Sequence. *Iranian Journal of Radiology*. 2015; 12(2): e22887.
27. **Gharehaghaji N**, Nazarpoor M, Saharkhiz H. Effect of iron oxide nanoparticles coating type on the relationship between nanoparticles concentration and signal intensity in inversion recovery T1-weighted MRI. *Medical Journal of the Islamic Republic of Iran*. 2015; 29:211.
28. Mesbahi A, Dadgar H, **Gharehaghaji N**, Mohammadzadeh M. A Monte Carlo approach to lung dose calculation in small fields used in intensity modulated radiation therapy and stereotactic body radiation therapy. *Journal of cancer research and therapeutics*. 2014; 10(4):896-902.
29. **Gharehaghaji N**, Mirahadi M. Evaluating Motivation and Interest in Choosing Career or Higher Education Study among Radiology Students in Tabriz University of Medical Sciences. *Jundishapur Education Development Journal*. 2014; 5(2):148-55 (Persian).
30. Saharkhiz H, **Gharehaghaji N***, Nazarpoor M, Mesbahi A, Pourissa M. The effect of inversion time on the relationship between iron oxide nanoparticles concentration and signal intensity in T1-weighted MR images. *Iranian Journal of Radiology*. 2014; 11(2): e12667.
31. Azabdaftari F, **Gharehaghaji N**, Hariri Akbari M. Motivation in learning English among the paramedical sciences students in Iran: finding a job or grabbing a culture? *Research and Development in Medical Education*, 2014; 3(1):9-13.
32. Mesbahi A, Jamali F, **Gharehaghaji N**. Effect of photon beam energy, gold nanoparticle size and concentration on the dose enhancement in radiation therapy. *BioImpacts*. 2013; 3(1): 29-35.
33. Oghabian MA, **Gharehaghaji N**, Masoudi A, Shanehsazzadeh S, Ahmadi R, Majidi RF, Hosseini HR. Effect of coating materials on lymph nodes detection

using magnetite nanoparticles. *Advanced Science, Engineering and Medicine*. 2013; 5(1):37-45.

34. Mesbahi A, Jafarzadeh V, **Gharehaghaji N**. Optical and NMR dose response of N-isopropylacrylamide normoxic polymer gel for radiation therapy dosimetry. *Reports of Practical Oncology & Radiotherapy*. 2012; 17(3):146-50.
35. Oghabian MA, **Gharehaghaji N**, Amirmohseni S, Khoei S, Guiti M. Detection sensitivity of lymph nodes of various sizes using USPIO nanoparticles in magnetic resonance imaging. *Nanomedicine: Nanotechnology, Biology and Medicine*. 2010; 6(3):496-9.
36. **Gharehaghaji N**, Oghabian MA, Sarkar S, Amirmohseni S, Ghanaati H. Optimization of pulse sequences in magnetic resonance lymphography of axillary lymph nodes using magnetic nanoparticles. *Journal of nanoscience and nanotechnology*. 2009; 9(7):4448-52.
37. **Gharehaghaji N**, Oghabian MA, Sarkar S, Darki F, Beitollahi A. How size evaluation of lymph node is protocol dependent in MRI when using ultrasmall superparamagnetic iron oxide nanoparticles. *Journal of magnetism and magnetic materials*. 2009; 321(10):1563-5.
38. Pourissa M, Refahi S, **Gharehaghaji N**. Prenatal diagnosis of Robert/Sc syndrome in a diabetic mother with a history of Mebendazole and Glibenclamide intake. *Journal of Acta Medica Iranica*. 2003; 41:148-149.
39. Hajizadeh Saffar M, Bahreyni Toossi MT, **Gharehaghaji N**. An evaluation of organ and effective doses arising from diagnostic chest X-ray procedure in Ghaem hospital Mashhad. *Medical Journal of Mashhad University of Medical Sciences*. 1999;43:9-13 (Persian).
40. Bahreyni Toossi MT, Hajizadeh Saffar M, **Gharehaghaji N**. An assessment of effective dose arising from conventional radiographies in Mashhad Ghaem hospital. *Medical Journal of Mashhad University of Medical Sciences*. 1998; 43:41-47 (Persian).
41. Hajizadeh Saffar M, Bahreyni Toossi MT, **Gharehaghaji N**. An assessment of gonads, bone marrow and thyroid doses from common medical X-ray

procedures in Mashhad Ghaem hospital. *Medical Journal of Mashhad University of Medical Sciences*.1998; 43:3-7 (Persian).

Presentations:

1. **Gharehaghaji N**, Hasani S. Abdominal imaging findings in Covid-19. 36th Iranian congress of Radiology. 3-6 November 2020 (Virtually).
2. **Gharehaghaji N**, Khalilneshad M, Ghasemi shayan R. Utilization of manganese oxide nanoparticles in MRI. 18th Iranian Congress of Radiographic Sciences Association. 18 November 2020 (Virtually).
3. Vafadar A, **Gharehaghaji N**, Goli M. Diffuse optical imaging for differentiating malignant and benign tumors of breast. 36th Iranian congress of Radiology. 3-6 November 2020 (Virtually).
4. **Gharehaghaji N***, Bakhtiari-Asl F. Nano shields in radiotherapy. 18th Iranian Congress of Radiographic Sciences Association. 18 November 2020 (Virtually).
5. **Gharehaghaji N**, Hosseinpour-Jahani B Ahmadzadeh F, Zarean F, Bakhtiari-Asl F. Nanotheranostics in brain cancer. 18th Iranian Congress of Radiographic Sciences Association. 18 November 2020 (Virtually).
6. Naghipoor Alamdari M, **Gharehaghaji N**. Comparing accuracy of semantic and radiomics features in prognosis of epidermal growth factor receptor mutation in non-small cell lung cancer. 18th Iranian Congress of Radiographic Sciences Association. 18 November 2020 (Virtually).
7. **Gharehaghaji N***, Khezerloo D, Ghiyabi M. Role of electromagnetic radio frequency waves in novel drug delivery devices and localized tumor therapy. The second National Congress of Bioelectromagnetic: Opportunities and Challenges. Tehran, Iran, 18-20 February 2020.
8. **Gharehaghaji N**, Hasani S. Graphene based nanotheranostics for MRI/optical imaging and cancer therapy. 3th Nanomedicine & Nanosafety Conference (NMNS), Tehran, Iran, 25-26 January 2020.

9. Zende Ghaem A, Hoseinpour Jahani B, Hasanpoor S, **Gharehaghaji N***. PET/MRI as a new method for detection and differentiation of breast cancer lesions. 10th International Tehran Breast Cancer Congress, Tehran, Iran, 23-25 October 2019.
10. **Gharehaghaji N**, Divband B. Potential of pegylated magnetite nano zeolite for magnetic resonance imaging and drug delivery. 19th International Zeolite Conference. Crown Perth, Australia 7-12 July, 2019.
11. **Gharehaghaji N**, Divband B. Ethylene glycol coated magnetic graphene oxide nanocomposite for MRI. 21th Iranian Inorganic Chemistry Seminar, Arak. Iran, 27-28 August, 2019.
12. Khezerloo D, **Gharehaghaji N**, Hasanpoor S. The role of optical imaging methods in diagnosis of breast diseases. 6th RIAPA Annual International Meeting of Research Institute for Applied Physics & Astronomy: Biophotonics, Tabriz, Iran, 11-12 July, 2018.
13. **Gharehaghaji N**, Divband B. Zeolites as supporting materials for gadolinium and iron oxide nanoparticles based MRI contrast agents. 5th Iran International Zeolite Conference, Tabriz, Iran, 26-27 August, 2018.
14. **Gharehaghaji N**, Bakhtiari Asl F, Divband B. Application of Porous Gd₂O₃ Nanoparticles as MRI Contrast Agent. 5th Iran International Zeolite Conference, Tabriz, Iran, 26-27 August, 2018.
15. **Gharehaghaji N**, Khezerloo D. Microdosimetry: experimental methods and medical applications. 12th Iranian Congress of Medical Physics, Tehran, Iran, July 19-20, 2018.
16. Khezerloo D, **Gharehaghaji N**. Diagnostic applications of superparamagnetic iron oxide nanoparticles as MRI contrast agents. 16th Iranian Congress of Radiographic Sciences Association, Tehran, Iran, May 1-4, 2018.
17. Divband B, Dabaghi F, **Gharehaghaji N**, Asadloo A. A Novel Drug Carrier System for Encapsulation of Curcumin. 8th International Conference on Nanotechnology (ICN2018), Istanbul, Turkey, February 8-9, 2018.

18. **Gharehaghaji N**, Dabaghi F, Divband B. Cytotoxicity and MRI study of nano magnetite carrier. 8th International Conference on Nanotechnology (ICN2018), Istanbul, Turkey, 8-9 February, 2018.
19. **Gharehaghaji N**, Divband B, Atashi Z, Zareei L. Fe₃O₄/zeolite nanocomposites: effect of zeolite support type on MRI Longitudinal relaxivity. The Second Nanomedicine & Nanosafety Conference, Tehran, Iran, November 29-30, 2017.
20. **Gharehaghaji N**, Nazarpour M, Saharkhiz H. Investigation of the T2 effect of carboxydextran coated iron oxide nanoparticles at different inversion times of MRI. 11th Iranian Congress of Medical Physics. Tehran, Iran, 6-7 October 2014 (Persian).
21. Saharkhiz H, **Gharehaghaji N***, Nazarpour M. Effect of coil non-uniformity on MR angiography images provided using iron oxide nanoparticles. 11th Iranian Congress of Radiographic Sciences Association, Tehran, Iran, May 4-5, 2013(Persian).
22. **Gharehaghaji N**, Mirahadi M. Use background equivalent radiation time (BERT) for patients' perception of the received radiation in routine CT scans. National Conference on Paramedicine and Health, Yasouj, Iran, May 8-11, 2012(Persian).
23. **Gharehaghaji N**, Oghabian MA, Sarkar S, Rafiei B. Optimization of imaging parameters in MR lymphography using iron oxide nanoparticles. 9th Iranian Congress of Medical Physics, Tehran, Iran, May 19-20, 2010.
24. **Gharehaghaji N**, Oghabian MA, Sarkar S, Beitollahi A. Effect of MRI on detection of lymph node size using USPIO nanoparticles. NanoSmat 2008 conference. Barcelona, Spain, October 21-24, 2008.
25. Oghabian MA. **Gharehaghaji N**, Sarbolouki MN, et al. Study of effective parameters on image quality using USPIO nanoparticles in MR lymphography. Iran's 1st International Conference on Biomaterials. Tehran, Iran, November 12-15, 2007.
26. Oghabian MA. Giti M, **Gharehaghaji N**, et al. Investigation of the current status of MR contrast agents containing iron oxide nanoparticles (USPIO)

and their detection sensitivity. 7th Iranian Congress of Medical Physics. Ahvaz, Iran, 13-15 February 2006 (Persian).

27. Oghabian MA. Giti M, Haddad P, **Gharehaghaji N**, et al. Detection sensitivity of MRI using ultrasmall superparamagnetic iron oxide nanoparticles (USPIO) in biological tissues. EMBS Annual International Conference. New York City, USA, August 30- September 3, 2006.

28. Oghabian MA. Giti M, **Gharehaghaji N**, et al. Effect of MR protocols on detectability of ultrasmall superparamagnetic iron oxide nanoparticles (USPIO). 6th International Conference on the Scientific and Clinical Applications of Magnetic Carriers. Krems, Austria, May 17-20, 2006.

Teaching experiences:

MSC students:

1. *Physics of magnetic resonance imaging*
2. *Magnetic resonance imaging techniques and protocols*
3. *Seminar*
4. *Research method*
5. *Principles of writing articles in English*
6. *Medical imaging systems and methods*
7. *MR imaging methods*

BSC students:

1. *Physical principles of MRI*
2. *Techniques and clinical aspects of computed tomography*
3. *Application of computers in medical imaging*
4. *Structure and properties of contrast media in medical imaging*
5. *Medical terms in radiology*
6. *Physical principles of computed tomography systems*
7. *Radiographic procedures 1, 2, 3*
8. *Dosimetry of ionizing radiation*
9. *Seminar*
10. *Specific radiographic procedures*

11. *Radiobiology*
12. *Medical physics*
13. *Basics of acoustic*
14. *General physics*