North American Chinese Medical Physicists Association

SPRING 2017
Volume 2 No.1

# NACMPA NEWSLETTER

Inside this issue:





## *President's Corner……*

**X. Allen Li, PhD, FAAPM**
NACMPA President

It is my great pleasure to write this first message for the Newsletter as your new NACMPA President. I look forward to a rewarding and exciting term with all of the planned activities for the organization.

The planning of our annual dinner meeting in Denver is underway. The organization committee made up of NACMPA leadership and local NACMPA members have been established and are actively working to identify meeting venue, conduct fund rising, and create meeting agenda. As always, we are anticipating a highly enjoyable evening.

This year, NACMPA will work with the Physics Group of Chinese Society of Radiation Oncology (CSTRO-PG) to organize the NACMPA Symposium with theme on Advanced Radiation Therapy Technologies during the 2017 Chinese Annual Meeting of Radiation Oncology Physics in Chongqing, China, on October 26-28, 2017. We hope this meeting would facilitate scientific exchange and provide a platform for NACMPA members to enhance their communications, collaborations and friendship with medical physicists in China. See Page 2 of this issue for meeting detail.

I appreciate the opportunity to work with all of you. Together we are making a much stronger organization.

## *A Brief History of NACMPA*

**Charlie Ma, Ph.D, FAAPM**
NACMPA Past President

Great organizational efforts were made by enthusiastic volunteers before the foundation of North American Chinese Medical Physicists Association (NACMPA). In my folder, I still have copies of the Directory of Chinese Medical Physicists in North America that I received in Aug 1993 and Aug 1994, and it was enjoyable reading the Chinese names of some fellow physicists whom I had only known by their English names. During the 1994 AAPM annual meeting in Anaheim, CA, I was among a group of Chinese physicists who gathered on Wednesday evening and decided to form our own organization. Dr. Nai-Chuen Yang acted as a coordinator in 1993 – 1994. At the 1995 AAPM annual meeting in Boston, the first dinner meeting was held through the efforts of, among others, Dr. Andrew Wu, Dr. Nai-Chuen Yang and Dr. Cheng Saw. Dr. Andrew Wu was elected as the first president of NACMPA. The second NACMPA dinner meeting was held in Philadelphia during the AAPM annual meeting and this tradition currently continues.

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# NACMPA Symposium 2017, October 26-28, Chongqing, China

You are cordially invited to participate in the North American Chinese Medical Physicists Association (NACMPA) Symposium to be held in conjunction with the 2017 Chinese Annual Meeting of Radiation Oncology Physics in Chongqing, China, on October 26-28, 2017. This meeting is organized by the Physics Group of Chinese Society of Radiation Oncology (CSTRO-PG) and sponsored by NACMPA. This meeting is intended to facilitate scientific exchange and to provide a platform for radiation oncology physicists worldwide to foster communications, collaborations and friendship. For meeting registration and hotel reservation, please follow: *http://rtpam2017.meeting.so/msite/main/en*

The NACMPA Symposium, with theme on Advanced Radiation Therapy Technologies, will include both invited and proffered presentations. Participants are encouraged to submit their abstracts following the instruction in the meeting website, AND, email copies of the abstracts to: nacmpa@yahoo.com, indicating that the abstracts are submitted for NACMPA Symposium. All abstracts will be reviewed by the NACMPA Symposium Scientific Committee. All accepted abstracts will be included in the meeting proceeding. The abstracts with the highest scores will be included as oral presentations in the Symposium program. Abstracts and presentations either in Chinese or English are acceptable for the Symposium. We look forward to seeing you in Chongqing!

NACMPA Symposium Organization and Scientific Committees:

| | |
|---|---|
| Chair: | Allen Li |
| Members: | Maria Chan, Steve Jiang, Charlie Ma, Lei Dong, Lei Xing, Zhigang (Josh) Xu, George Xu, Fang-Fang Yin, Cedric Yu |
| Secretary: | Jing Cai |

**Dates to Remember**

| | |
|---|---|
| Sept.10, 2017: | Online Meeting Registration deadline |
| Sept. 20, 2017: | Abstract submission deadline |
| Sept. 30, 2017: | Hotel reservation deadline |
| Oct. 26, 2017: | Arrival and on-site registration |
| Oct. 27-28, 2017: | Meeting/Symposium programs |

# NACMPA 23rd Annual Meeting will be hosted on Aug 2, 2017

## Empress seafood, 2825 W Alameda Ave, Denver, CO 80219

**Meeting Agenda**

| | |
|---|---|
| 6:15 PM: | Member Arrival |
| 6:30 PM: | Introduction of Officers |
| | Recognition of Local Organizers |
| | Introduction of Sponsors |
| | President's Report |
| | Financial Report |
| 7:00 PM: | Hall of Fame Award |
| | Service Award |
| | Best Paper Award |
| 7:15 PM: | Keynote Lecture-2017 Hall of Fame Awardee |
| 7:45 PM: | Election of secretary and board member at large (see page 10,11) |
| | New Business |
| 9:00 PM: | End (Executive Meeting Follows) |

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# *A Brief History of NACMPA*

Other past presidents are: Dr. James Chu July 1996-1997; Dr. Raymond Wu 1998-2000; Dr. Jerome Dare 2001-2002; Dr. Fang-Fang Yin 2003-2004; Dr. Cheng Saw 2005-2006; Dr. Charlie Ma 2007-2008; Dr. Jack Yang 2009-2010; Dr. Almon Shiu 2011-2012; Dr. Maria Chan 2013-2014; Dr. Jackie Wu 2015-2016; and Dr. Allen Li is current president. After 21 years of continuous growth, NACMPA has become a truly international organization with 500 registered members, including 40 from countries and regions outside of North America.

A major event in the NACMPA history occurred in 2007 when a working group consisting of Dr. Charlie Ma (chair), Dr. Andrew Wu, Dr. James Chu, Dr. Raymond Wu, Dr. Fang-Fang Yin, Dr. Cheng Saw, Dr. Jack Yang and Dr. Zhi-Heng Wang established the Bylaws for NACMPA, which were approved by the membership through an email ballot by October 15, 2007. NACMPA was then formally incorporated as a not-for-profit organization in Delaware under section 501 (C) (3) of the US Internal Revenue Code of 1954. This was a significant effort and the NACMPA tax status was finally resolved two years later. Based on its Bylaws, NACMPA aims to (1) promote interests in the field of physics in medicine and biology, (2) improve the practice of medical physics in its application to human health care, (3) provide a forum for scientific exchange and interactions for medical physicists in North America, China, Taiwan, Hong Kong and other Asian Oceanic Countries and regions, and (4) organize activities to promote scientific exchange of information in medical physics worldwide.

Over the years, NACMPA has co-sponsored many scientific conferences with corresponding professional organizations in Asian Oceanic Countries and regions. These include but are not limited to:

- Symposium on the New Horizon of Medical Physics in Radiation Oncology (Taipei, Taiwan 2002),
- Medical Physics Workshop on Advances in Radiation Oncology Physics (Chengdu, China 2004),
- International Congress on Medical Physics - a Satellite Meeting of the World Congress of Medical Physics 2006 (Hangzhou, China 2006),
- The Seventh Asia-Oceania Congress on Medical Physics and the 13th National Annual Meeting of Chinese Society of Medical Physics (Huangshan, China 2007),
- Image-Based Radiation Therapy Workshop (Bangkok, Thailand 2007),
- Asian-Pacific Congress of Medical Physics (Taipei, Taiwan 2008),
- Great Wall 2008 International Congress on Medical Physics and the 14th National Annual Meeting of Chinese Society of Medical Physics (Beijing, China 2008),
- Workshop on RT Equipment and Quality Assurance (Shenyang, China 2009),
- Yangtze River 2009 International Conference on Medical Imaging Physics and the 5th National Annual Meeting of Medical Imaging Physics (Nanjing, China 2009),
- Image-Based Technology in Radiation Oncology (Kuala Lumpur, Malaysia2009),
- Great Wall 2010 International Congress on Medical Physics and the 15th National Annual Meeting of Chinese Society of Medical Physics (Nanjing, China 2010),
- First International Forum of Chinese Radiation Oncologists and Medical Physicists (Lijiang, China 2011),
- World Congress on Medical Physics and Biomedical Engineering (Beijing, China 2012),
- 1st Hefei International Forum for Radiological Medical Physics (Hefei, China 2015),

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- 2nd Hefei International Forum for Radiological Medical Physics (Hefei, China 2016).

NACMPA also organized many other activities in addition to its annual assemblies and dinner events at AAPM annual meetings. Based on a membership survey conducted in 1996, several projects were initiated.

The first NACMPA web site was launched in 1998, and subsequently attained major upgrades in 2004 (registered NACMPA.org), 2007 and 2016.

A hotel room-sharing program was initiated for NACMPA members at the AAPM annual meeting in 1999.

NACMPA actively participated in the AAPM Partners in Physics program and started sponsoring physicists in developing countries in Asia since 2000.

An official NACMPA logo was designed in 2004.

The annual assembly and dinner event became more formalized with increased vendor sponsorships and printed dinner meeting program booklets from 2005. Executive officers were officially recognized when they completed their terms.

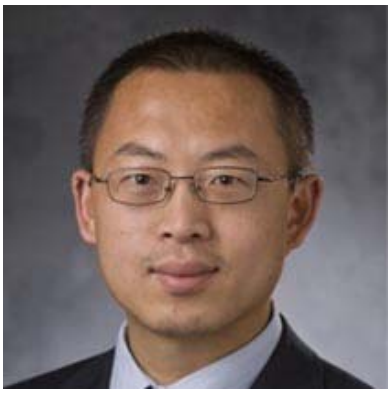
Since 2006, travel grants have been awarded to support the scientific exchange between NACMPA members and medical physicists in China and other Asian Pacific countries and regions.

In 2008, the first Medical Physics Hall of Fame award was presented to Dr. Clifton Ling, who was followed by four other recipients: Dr. Andrew Wu (2013), Dr. Raymond Wu (2014), Dr. Charlie Ma (2015) and Dr. Cedric Yu (2016).

In 2012, NACMPA launched the first officially endorsed scientific journal, International Journal of Medical Physics, Clinical Engineering and Radiation Oncology (IJMPCERO) and the NACMPA Best Paper Awards were given annually to the best papers published in IJMPCERO.

In fall 2016, the first issue of the NACMPA biannual News Letter was launched.

# *Messages from NACMPA Secretary..*



**Jing Cai, Ph.D.,**
NACMPA Secretary

NACMPA aims to promote the scientific, educational, and professional development of Chinese medical physicists in the field of physics in medicine and biology. In line with this goal, NACMPA Board of Directors has recently initiated a move to enhance the engagement of our members, especially young members, to the NACMPA society, and to create opportunities to boost their professional development. Under this initiative, earlier this year NACMPA has announced its solicitation for nominations (including self-nomination) for Secretary, Member-at-large, and Members of NACAMP Annual Meeting Committee. We have received a great response from our members, and would like to take this opportunity to thank those who applied. The final candidates for these opening positions have been finalized (Short Bios of the candidates are in page 10,11):

Candidates for Secretary: Taoran Li, Dengsong Zhu

Candidates for Board Member-at-large: Lei Ren, Chengyu Shi

And, a new NACMPA Annual Meeting Committee has been formed. Members include:

Jing Cai (Chair), Peng Zhou (Co-Chair), John Zha, Jade Luo, Chunhao Wang, Yang Sheng, Brain Wang (Ex Officio).

The NACMPA Annual Meeting is the most recognized and enjoyable event among Chinese physicists. Every year, many volunteers contribute to this great event. The main charge of this committee is to organize and coordinate the annual NACMPA meeting/dinner committee. Specific tasks include, but not limited to, selecting a venue and dinner menu, arranging transportations, promoting the event, soliciting vendor sponsorships. Preference will be given to members from the city where the annual meeting to be held. The NACMPA member-at-large will serve as an ex officio member of the committee.

# *Medical Physicist Education and Training in USA*

**Fang-Fang Yin, Ph.D, FAAPM**
NACMPA Past President

In the AAPM website (*https://www.aapm.org/education/default.asp*), Medical Physics is defined as an applied branch of physics concerned with the application of the concepts and methods of physics to the diagnosis and treatment of human disease. It is allied with medical electronics, bioengineering, and health physics. Medical Physicists are defined as professionals who contribute to the effectiveness of radiological imaging procedures by assuring radiation safety and helping to develop improved imaging techniques (e.g., mammography CT, MR, ultrasound). They contribute to development of therapeutic techniques (e.g., prostate implants, stereotactic radiosurgery), collaborate with radiation oncologists to design treatment plans, and monitor equipment and procedures to ensure that cancer patients receive the prescribed dose of radiation to the correct location. In general, medical physicists are concerned with three areas of activity: clinical service and consultation, research and development, and teaching.

AAPM website further states that the essential responsibility of the Qualified Medical Physicist's clinical practice is to assure the safe and effective delivery of radiation to achieve a diagnostic or therapeutic result as prescribed in patient care. The medical physicist performs or supervises the technical aspects of procedures necessary to achieve this objective. The responsibilities of the medical physicist include: protection of the patient and others from potentially harmful or excessive radiation; establishment of adequate protocols to ensure accurate patient dosimetry; the measurement and characterization of radiation; the determination of delivered dose; advancement of procedures necessary to ensure image quality; development and direction of quality assurance programs; and assistance to other health care professionals in optimizing the balance between the beneficial and deleterious effects of radiation; and compliance with applicable federal and state regulations. Here Qualified Medical Physicist (QMP) is an individual who is competent to practice independently in one or more of the subfields of medical physics (Therapeutic Medical Physics, Diagnostic Medical Physics, Nuclear Medical Physics, and Medical Health Physics), and meets each of the following credentials: 1) Has earned a master's or doctoral degree in physics, medical physics, biophysics, radiological physics, medical health physics, or equivalent disciplines from an accredited college or university; and 2) Has been granted certification in the specific subfield(s) of medical physics with its associated medical health physics aspects by an appropriate national certifying body and abides by the certifying body's requirements for continuing education.

As such, a qualified medical physicist will need to go through vigorous and systematic educational and training programs. AAPM supports its mission to advance the science, education and professional practice of medical physics by fostering the education of medical physicists, physicians and other professionals. Educational and training programs are typically through Medical Physics Academic and Residency Programs in several academic institutions and Clinics.

Currently, there are over 50 academic programs mainly in USA and Canada who offer graduate training in medical physics. Students completed degree in medical physics from a medical physics graduate program can seek employment in hospitals and clinics, industries, business partners, government agents, or other research institutes, etc. Only for those who plan to practice in clinical medical physics will need to gain a status of qualified medical physicist. In order to do so, you have to obtain your degree in an institution who has been accredited by Commission on Accreditation of Medical Physics Education Programs (CAMPEP). This organization was established to maintain the minimum standards required for an educational and/or training program in clinical medical physics.

At present, there are three pathways to become a qualified clinical medical physicist:

1. Obtain a graduate medical physics degree (MS or above) from a CAMPEP approved graduate program. Then, enrolled in a CAMPEP approved clinical

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# Medical Physicist Education and Training in USA

residency program for more than 2 years. The individual is then qualified to apply for board certification examination process.

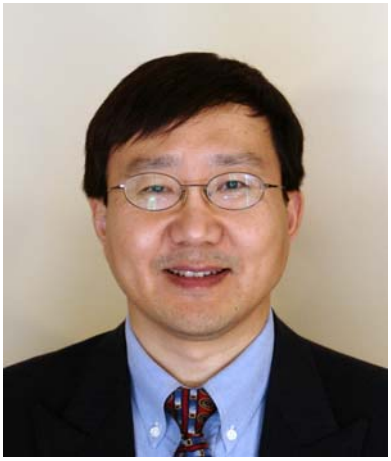
2. Obtain a Doctor of Medical Physics (DMP) degree in a CAMPEP approved academic training program who can offer two-year class education in medical physics and two-year follow-up clinical residency training in one of medical physics sub-specialties. Then the individual will be qualified to apply for board certification examination process.
3. Obtain a certificate to prove that you took basic medical physics courses from a CAMPEP approved medical physics certificate program if you previously completed a PhD degree from a non-medical physics graduate program but very closely related field, such as physics, biomedical engineering etc. Then the individual can apply for a two-year clinical medical physics residency program. After two years, the individual will be qualified to apply for board certification examination process.

American Board of Radiology (ABR) provides certification for clinical medical physicist in three areas: (therapeutic medical physics, diagnostic medical physics, or nuclear medical physics). There are typically three steps to obtain this certification. A certificate will be issued to each candidate who has satisfactorily met the training requirements specified by the board and has passed the computer-based examinations (Part 1 and Part 2) and the Part 3 (oral) examination, demonstrating an adequate level of knowledge and ability in medical physics in accordance with the definition as stated in the bylaws, policies, and procedures of the American Board of Radiology. ABR Medical Physics Certificates issued in 2002 and beyond are time-limited certificates. Some other organizations also provide certifications in some sub-specialties.

You can almost find all materials and links through AAPM website for information related to medical physics education and training. Also, information related to who will provide what certification(s) and how to obtain these certification(s) is available. Note that medical physics graduate program typically go through routine admission process while the medical physics residency program may need to go through matching process.

Finally, I wish to make one additional note which you may be interested. As medical physicists demand continuing to increase in China, thousands more clinical medical physicists are needed during the next 5-10 years. Current training programs in medical physics in China could supply far more less graduates in medical physics to meet this demand. As such there are substantial challenges both in quantity and quality for producing enough medical physicists in clinical practices. Duke University has partnered with Kunshan City in Jiangsu Province and Wuhan University initiated Duke Kunshan University (DKU) (*https://dukekunshan.edu.cn/*) in 2014. Students graduated from DKU will be granted Duke University Diploma. DKU currently has 5 graduate programs and 1 undergraduate program (starting 2018). One of the graduate programs is medical physics (*https://dukekunshan.edu.cn/en/academics/master-science-medical-physics*). Our students at DKU spend at least 6 months at Duke for research and course activities. We welcome your contributions to enhance this medical physics graduate program in China.

# *Advanced Research Topics in Particle Therapy*



**Lei Dong, Ph.D, FAAPM**
NACMPA Member

**P**article therapy (including protons and heavier particles, such as carbon ions) is definitely a fast-growing area of radiation therapy. In fact, we are currently only treating 1% of overall radiation therapy patients with protons or carbon ions; however, research focused on particle therapy has produced more than 15% of overall publications in radiotherapy, according to Scopus citation database. In a recent European oncology annual meeting (ESTRO 2017), near half of the physics sessions were assigned to particle therapy related topics, including biological effects. This is definitely a very "hot" area of research.

Particle beams have unique physical characteristics. One of them is the "Bragg peak", at which the beam deposits most energies (high linear energy transfer or high LET) near the end of its range, protecting normal tissues beyond its range. High LET introduces different biological effects because the effect of DNA damage is larger than and different from the conventional x-ray therapy. In general, proton plans produced much lower body doses, compared to external beam photon therapy. However, particle beams suffer the risk of range uncertainties. This means that the position of the Bragg peak may not be accuracy. Additional margins may have to be added to ensure target coverage. Sometimes it is necessary to avoid pointing beam directly towards an adjacent critical structure distal to the target. These practical considerations have reduced the potential benefit of particle beams in sparing critical organs in high dose regions.

**Range uncertainties** are under the most intense research in particle therapy. There are different sources of uncertainties. One main source of uncertainties comes from CT images, which may not include sufficient information to calculate proton stopping power. Dual-energy CT scanners are recently becoming commercially available, which helps to provide additional information about elemental composition of human tissues. Various modeling approaches and experimental validations are needed to improve and verify the eventual accuracy when using a dual-energy CT scanner for treatment planning. Another major impact is the day-to-day anatomical changes. Water equivalent thickness variations along the beam path cause range uncertainties. This is why adaptive radiotherapy becomes a more urgent need for proton therapy than photon therapy. Repeat CT simulation is commonly used in proton therapy to verify any anatomical changes in the beam path. In-room cone-beam CT scanner (CBCT) is the latest addition to most proton therapy centers. CBCT allows for volumetric imaging and more frequent monitoring of patient's anatomical changes. Research has been conducted to use CBCT directly for dose calculations and adaptive radiotherapy. Improvement in the accuracy of Hounsfeld Unit (HU) is needed for CBCT to allow more accurate proton dose calculation. Alternative approaches to deal with range uncertainties include *in vivo* detection of proton range in patients. New measurement techniques have been developed to explore the physics interactions near the Bragg peak. This includes prompt gamma imaging by detecting photons emitted from proton interactions with nuclei within the patient. Similarly, ultrasound and PET imaging were alternative detection methods based on different principles. In vivo imaging allows for real-time range-adaptive radiotherapy, which has the potential to further minimize the impact of range uncertainties. Another big research area is related to robustness optimization. By anticipating certain setup errors and range uncertainties, computer optimization can be performed to incorpo-

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rate both dosimetric requirements and robustness requirements into the optimization process. The goal is to minimize the impact of uncertainties in addition to the target coverage and normal tissue sparing.

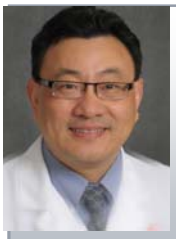
**Pencil beam scanning (PBS)** is becoming the major beam delivery technique of choice due to its potential to create much better dose distributions. Commissioning and quality assurance are still new to this new delivery technique. There are also new developments in hardware to make fast PBS delivery and optimized delivery sequences. The most intense research was found in motion management. Due to dynamic proton beam delivery, there were concerns about interplay effects between scanning beam and anatomical motion both lateral to the beam direction and in between layer switching (when treating at two adjacent depths along the beam direction). Repainting, tracking, gating, scan pattern optimization, and ultrafast beam delivery were some examples of motion management strategies.

**Relative Biological Effectiveness (RBE)** of particle beam is another big research area. For proton therapy, the average impact is relatively small (about 10% higher than photon therapy). The high effect is mainly located near the Bragg peak region. Due to its high potential damage to nearby normal structures, researchers recently used optimization approach to re-distribute high LET regions with little compromises to typical dose constraints. For heavier particles, such as carbon ions, radiobiology is a huge research area because the mechanism of biological damage and repair is drastically different from proton beams. In general, RBE has a complex relationship to tissue type, organ function, dose per fraction, and particle types etc. Depending on different end points, RBE could have very different values. There are hints of evidence that combination therapies (using particle therapy as one of treatment arms) could further enhance the biological effectiveness of therapy. This includes immunotherapy.

**Treatment effectiveness and outcome studies of particle therapy** is perhaps the most desirable area of research in particle therapy. Due to high expenses in building such facilities, the cost/benefit is under strict scrutiny. Unfortunately, long-term benefits take longer time to accumulate clinical evidence. Disease specific outcome and comparative research are very popular. Big data and model-based prediction plays a much bigger role in Europe. A few countries have adopted model-based prediction as indication for proton therapy. I am sure that more clinical data will come out with more patients treated in increasing number of proton therapy centers around the world.

There is no doubt that particle therapy research has been very active recently. Intense research will help to improve the accuracy of beam delivery and have a better understanding of biological effectiveness of particle therapy. Hopefully more patients, in particular, some sub-group of patients can be identified to benefit most from particle therapy.





***EDITOR'S NOTE***

*NACMPA NEWSLETTER is published by the North American Chinese Medical Physicists Association on a semiannually schedule. We welcome all readers to send us any suggestions or comments on any of the articles or new features to make this a more effective and engaging publication and to enhance the overall readership experience. Next issue: December 2017. Contact us:* nacmpa@yahoo.com

*Editor: Zhigang (Josh) Xu, PhD*

**Lincoln Pao, MD FACR**

## *Member's Corner…..*

I have heard physicists and physicians gripe. Why No Chinese AAPM President or more Coolidge Awardees? Why aren't there more Chairpersons?

This requires reflection and understanding of the parameters that these positions and awards reflect in their achievements. Publications, committee work, leadership, and networking are part of the formula.

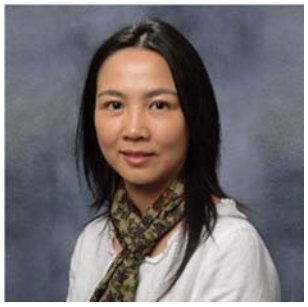
We need to work together to become the future leaders of our specialty so our entire community benefits. Political, language, and religious differences should be overcome since our children will assimilate in American society with changes in their priorities. Their transition would be eased by our personal assimilation in spite of potential barriers.

Progress can occur through collaboration. I hope that you will join a Research and Committee Collaboration Effort (RACCE) for the numerous organizations that reflect our diversity. The meetings will be via virtual technology and at national/international meetings with plans for a semiannual publication to help promote our collaborative efforts.

To go beyond this glass ceiling requires us to achieve the prior mentioned parameters and for us to work together. Please help us in our effort to win this RACE to beat Cancer. Please contact Maria Chan (chanm@mskcc.org) with your interest to join the RACCE.

## *NACMPA Milestones…….*

The North American Chinese Medical Physicist Association (NACMPA) was founded in United States, 1995, after the social dinner gathering of all Chinese physicists at the 1994 annual meeting of AAPM at Anaheim, CA. I have witnessed our initial group blossom into a flourishing organization in the span of 22 years, and here I would like to share with you the milestones of the journey.



**Maria F. Chan, Ph.D. FAAPM**
Past President

1995 – Founded NACMPA
1997 – Conducted Members Opinion Survey
1998 – Established NACMPA Website
1999 – Started Hardcopy Membership Directory
2000 – NACMPA Started to Sponsor PIP
2003 – President-Elect to Serve in IAC of AAPM
2004 – Designed NACMPA Logo
2004 – Registered Domain Name NACMPA
2005 – Official Recognition of Officers
2005 – Developed Dinner Program Booklets
2006 – Membership Directory Became Online
2006 – Awarded Travel Grants to Members
2007 – Development of NACMPA By-Laws
2007 – Redesigned NACMPA Website
2008 – Incorporation of NACMPA as Non-Profit Organization
2008 – Established "Hall of Fame" Award
2011 – NACMPA hosts the first international conference for Chinese Physicists all around the world
2013 – Established/sponsored "Best Paper" award of IJMPCERO journal
2016 – Started the first issue of the semi-annual NACMPA Newsletters

I hope that you will leave your footprints and be part of the NACMPA history!

# *Candidates for Secretary…..*

**Taoran Li, Ph.D**
NACMPA Member

I am currently a Clinical Instructor and Associate Director of Medical Physics Residency at Thomas Jefferson University. I finished my Ph.D. in 2013 at Duke University Medical Center, and subsequently underwent residency training. My research interests include online adaptive radiation therapy, phantom-less patient specific quality assurance, knowledge-based treatment planning, and deformable image registration. In addition, I am also passionate about exploring and developing didactic and visual-based educational methods to better train medical physics students and residents, and to enhance educating patients and the general public.

I have been working as a volunteer for NACMPA activities since 2012, including helping organize annual meeting dinners, coordinate transportations, and create/maintain NACMPA's facebook page. NACMPA is a wonderful organizations in that it provides Chinese physicists community in North America a venue to connect and share experiences. This is especially valuable for students and junior physicist members.

If selected as secretary, I plan to create a short video telling the story of NACMPA and promote our organization, both within the US/Canada and in greater China region. I also plan on enhancing benefits to student/trainee members by organizing special networking programs during annual meetings.

**Dengsong Zhu, M.S.**
NACMPA Member

I received my BA in physics and MS in physics from Nankai University in 2000 and 2003, respectively. Since 2006, I started to do research and clinical tasks at LEO W. JENKINS CANCER CENTER at Greenville NC. In 2008, I received my second MS in medical physics from East Carolina University.

After graduation, I worked in medical physics consulting group and then the Regional Cancer Center of UPMC at Erie of PA. I was certified by ABR in Therapeutic medical physics in 2013. Later, I was certified by MDCB in 2015. Right now, I am internal medical physics leader and Radiation Safety officer at St. Thomas Rutherford hospital of Ascension Health system.

I have published over 20 peer-reviewed papers and over 20 abstracts and papers in professional conferences. Currently I serve as a member of difference committees of AAPM, including Maintenance of Certification Subcommittee, Insurance Subcommittee, and JACMP Board of Editors.

# *Candidates for Board Member-at-large……*

**Lei Ren, Ph.D**
NACMPA Member

Dr. Ren received his PhD degree in Medical Physics from Duke University in 2009, and then worked as a medical physicist in the radiation oncology department at Henry Ford Hospital in Detroit, MI for two years. He joined Duke University as a faculty for both the radiation oncology department and the Medical Physics program in 2011, and is currently an Associate Professor in the department. Dr. Ren has been active in both research and clinical practice. His research interests include imaging dose reduction using digital tomosynthesis (DTS), cone-beam CT (CBCT) scatter correction, DTS/CBCT/CT image reconstruction methods using under-sampled data, fast 3D/4D MRI, rigid and deformable image registration. He has received funding from both National Institutes of Health and industry grants. Dr. Ren has supervised over 15 master/PhD students or Postdoc with the recipient of the Excellence in Mentorship Award from the Medical Physics program at Duke. His group has received the Junior Investigator Award from AAPM and the Basic Science Abstract Award from ASTRO. Dr. Ren has authored or co-authored over 30 peer-reviewed publications and 5 book chapters. In clinical practice, Dr. Ren is board certified from the American Board of Radiology in Therapeutic Radiological Physics, and has special interests in stereotactic radiosurgery (SRS) and stereotactic body radiation therapy (SBRT). Dr. Ren has been actively engaged in activities both at Duke and in the radiation therapy society. He is a primary member in the admission committee and qualify-exam committee of the Medical Physics graduate program at Duke. He has been invited to give talks to AAPM educational courses including SAM sessions, and the AAPM summer school. Dr. Ren has also been serving as abstract reviewer, session chair and discussant for the AAPM and ASTRO annual meetings since 2010. In addition, he has been serving as a member of the ASTRO research grant committee, editorial board member of *Cancer Translational Medicine* journal, and board of associate editors of *Medical Physics* journal. He also provided reviews for book proposals, grant funding agencies, and a

**Chengyu Shi, Ph.D**
NACMPA Member

I am an associate attending medical physicist and the lead physicist overseeing clinical physics operations at Memorial Sloan Kettering's outpatient locations in Basking Ridge and Monmouth, New Jersey. My responsibilities include providing and ensuring clinical coverage, supervising faculty physicists and planners, implementing new advanced treatment techniques, and promoting more productive research activities for faculty physicists.

My research interests are in Monte Carlo simulation, virtual human phantom development and applications, machine learning and deep learning applications, quality assurance for LINAC, imaging-guided radiation therapy technologies, special treatment techniques including stereotactic body radiotherappy, stereotactic radiosurgery, and more. I have published more than 60 peer-reviewed articles and numerous abstracts and have frequently served as guest associate editor and reviewer for many prestigious journals.

I received my PhD in nuclear engineering and science from Rensselaer Polytechnic Institute in Troy, New York, in 2004 and did my medical physics residency training at the University of Arkansas for Medical Sciences in Little Rock. I was certified by the American Board of Radiology in 2008 and became a faculty member of MSK in June 2016.