

Publications, Education and Research Activities

Motohiko Tanaka, Ph.D.

[1] Refereed Journals [査読付き]

1. 田中基彦, 「計算機シミュレーションで物理学を研究する – マイクロ波で氷は融解するか?」 中部大学工学部紀要第57巻, 2022年3月; M. Tanaka, Physics Research by Computer Simulations – Is the ice melted and heated by microwave applications ? Bulletin of Engineering, Chubu University, March (2022).
2. M. Tanaka and M. Murakami, Relativistic and electromagnetic molecular dynamics simulations for a carbon-gold nanotube accelerator, Computer Physics Communications, Elsevier Publ., 10.1016/j.cpc.2019.03.012, 241, pp. 56-63 (2019).
3. M. Murakami and M. Tanaka, Generation of high-quality mega-electron volt proton beams with intense-laser-driven nanotube accelerator, Applied Phys. Letters, 102, 163101 (2013), with front cover page (color plate).
4. M. Tanaka, H. Kono, K. Maruyama, and Y. Zempo, Heating of liquid water and ice irradiated by far-infrared electromagnetic waves: Theoretical study by quantum mechanical molecular dynamics [refereed], Proceedings of Global Congress on Microwave Energy Applications, pp.146-158 (ed. R.L.Schulz and D.C.Folz, 2013).
5. M. Kanno, K. Nakamura, E. Kanai, K. Hoki, H. Kono, and M.Tanaka, Theoretical verification of nonthermal microwave effects on intramolecular reactions, J. Physical Chemistry, 116, 2177–2183 (2012).
6. M.Ignatenko and M.Tanaka, Numerical analysis of the microwave heating of compacted copper powders in single-mode cavity, Jpn.J.Appl.Phys., 50, 097302 (2011).
7. M. Ignatenko and M. Tanaka, Effective permittivity and permeability of coated metal powders at microwave frequency, Physica B, 405, 352–358 (2010).
8. Y. Mao, Z. Shang, Y. Imai, T. Hoshino, R. Tero, M. Tanaka , N. Yamamoto, K. Yanagisawa, T.Urisu, Surface-induced phase separation of a sphingomyelin/cholesterol/ganglioside GM1-planar bilayer on mica surfaces and microdomain molecular conformation that accelerates A β oligomerization, Biochimica et Biophysica Acta, 1798, 1090–1099 (2010).
9. M.Tanaka, H.Kono, and K.Maruyama, Selective heating mechanism of magnetic metal oxides by a microwave magnetic field, Phys.Rev. B., 79, 104420 (2009).
10. M.Ignatenko, M.Tanaka, and M.Sato, Absorption of microwave energy by spherical nonmagnetic metal particle, Jpn.J.Appl.Phys., 48, 067001 (2009).
11. G. Xie, M.Suzuki, D.V. Louzguine, M.Tanaka, M.Sato, and A. Inoue, Analysis of

electromagnetic field distributions in a 915 MHz single-mode microwave applicator, PIER 89, 135-148 (2009).

12. M.Tanaka and M.Sato, Mechanism of enhanced heating of salty water and ice under microwaves, JMPEE (International Microwave Power and Energy Institute), 42, 62-69 (2008).
13. M.Murakami and M.Tanaka, Nanocluster expansion into vacuum and quasi-mono energetic spectrum by uniformly distributed contaminant ions, Phys.Plasmas, 15, 082702 (2008).
14. M.Suzuki, M.Ignatenko, M.Yamashiro, M.Tanaka and M.Sato, Numerical study of microwave heating of micrometer size metal particles, ISIJ (Iron and Steel Institute of Japan), 48, 681-684 (2008).
15. H.Shimazu and M.Tanaka, Numerical simulation of small-scale low-beta magnetic flux ropes in the upper ionospheres of Venus and Mars, Planetary Space Sci., 56, 1542-1551 (2008).
16. M.Tanaka and M.Sato, Microwave heating of water, ice and saline solution: Molecular dynamics study, J.Chem.Phys., 126, 034509 1-9 (2007).
17. K.Nakai, H.Kono, Y.Sato, N.Niitsu, R.Sahnoun, M.Tanaka, Y.Fujimura, Ab initio molecular dynamics and wavepacket dynamics of highly charged fullerene cations produced with intense near-infrared laser pulses, Chemical Physics, 338, 127-134 (2007).
18. M.Tanaka and Y.Rabin, Nanopores with DNA: Strong electrostatic interactions in cellular dynamics processes, Flow Dynamics, pp.212-216 (AIP Conference Series 832, American Institute of Physics, 2006).
19. T.Koga and M.Tanaka, First-principles molecular dynamics studies of plasma surface interaction, Journal of Korean Physical Society, Suppl., 49, S52-55 (2006).
20. R.Sahnoun, K.Nakai, Y.Sato, H.Kono, Y.Fujimura, and M.Tanaka, Stability limit of highly charged C₆₀ cations produced with an intense long-wavelength laser pulse: Calculation of electronic structure by DFT and wavepacket simulation, Chem.Phys. Lett., 430, 167-172 (2006).
21. R. Sahnoun, K. Nakai, Y. Sato, H. Kono, Y. Fujimura, M. Tanaka, Theoretical investigation of the stability of highly charged C₆₀ molecules produced with intense near-infrared laser pulses, J.Chem.Phys., 125, 184306 1-10 (2006) .
22. Y.Rabin and M.Tanaka, DNA in nanopores – Counterion condensation and coion depletion, Physical Rev. Letters, vol.94, 148103 (2005).
23. M.Tanaka, Charge inversion of a macroion in electrolyte solvent: A rotating rod with polyelectrolyte counterions, Slow Dynamics in Complex Systems, 285-290

(AIP Conference Series 708, American Institute of Physics, 2004).

24. M.Tanaka, Electrophoresis of a rod macroion under polyelectrolyte salt: Is DNA charge inverted ?, J. Physics: Condensed Matter, 16, S2127-2134 (2004).
25. M.Tanaka, The effects of asymmetric salt and a cylindrical macroion on charge inversion: Electrophoresis by molecular dynamics simulations, Phys.Review, E68, 061501 (2003).
26. M.Tanaka and A.Yu. Grosberg, Electrophoresis of charge inverted macroion complex : Molecular dynamics study, Euro.Phys.J., E7, 371-379 (2002).
27. M.Tanaka, The origins of electrical resistivity in magnetic reconnection: 2,3-D macro-particle simulation study, Earth Planets Space, 53, 463-472 (2001).
28. M.Tanaka and A.Yu. Grosberg, Giant charge inversion of a macroion due to multivalent counterions and monovalent coions: Molecular dynamics study, J.Chem.Phys., 115, 567-574 (2001).
29. M.Tanaka, and T.Tanaka, Clumps of randomly charged polymers: Molecular dynamics simulations of condensation, crystallization and swelling, Phys.Review, E62, 3803-3816 (2000).
30. M.Tanaka, A.Yu Grosberg, and T.Tanaka, Molecular dynamics simulations of polyampholytes, Langmuir (Amer.Chemical Soc.), 15, 4052-4055 (1999).
31. M.Tanaka, A.Yu Grosberg, and T.Tanaka, Molecular dynamics of strongly coupled multichain Coulomb polymers in pure and salt-added Langevin fluids, J.Chem.Phys., 110, 8176-8188 (1999).
32. M.Tanaka, A.Yu Grosberg, and T.Tanaka, Molecular dynamics of structure organization of polyampholytes, Polyelectrolytes pp.60-63 (edited by E.Kokufuta, 1998).
33. M.Tanaka, A.Yu Grosberg, and T.Tanaka, Molecular dynamics of multichain Coulomb polymers and the effect of salt ions, Slow Dynamics in Complex Systems pp.599-606 (edited by M.Tokuyama and I.Oppenheimer, Amer.Institute of Physics, 1998).
34. M.Tanaka, A.Yu Grosberg, V.S.Pande, and T.Tanaka, Molecular dynamics study of structure organization in strongly-coupled chain of charged particles, Phys.Review, E56, 5798-5808 (1997).
35. M.Tanaka, Asymmetry and thermal effects due to parallel motion of electrons in collisionless magnetic reconnection, Phys.Plasmas, 3, 4010-4017 (1996).
36. H.Shimazu, M.Tanaka, and S.Machida, The behavior of heavy ions in

collisionless parallel shocks generated by the solar wind and planetary plasma interactions, J.Geophys.Res., 101, 27565-27571 (1996).

37. M.Tanaka, Macro-particle simulation by parallel computers, J.Plasma and Fusion Soc.Jpn., 72, 542-548 (1996).
38. H.Shimazu, S.Machida, and M.Tanaka, Macro-particle simulation of collisionless parallel shocks generated by interactions between the solar wind and planetary plasmas, J.Geophys.Res., 101, 7647-7653 (1996).
39. M.Tanaka, Macro-particle simulations of collisionless magnetic reconnection, Phys.Plasmas, 2, 2920-2930 (1995).
40. M.Tanaka, Macro-EM particle simulation method and a study of collisionless magnetic reconnection, Comput.Phys.Comm., 87, 117-138 (1995).
41. M.Tanaka, Particle simulations of collisionless magnetic reconnection, "Theory of Fusion Plasmas" pp.233-246, Societa Italiana di Fisica (1994).
42. M.Tanaka, A simulation of low-frequency electromagnetic phenomena in kinetic plasmas of three dimensions, J.Comput. Phys., 107, 124-145 (1993).
43. M.Tanaka, 3-D Macroscale electromagnetic particle simulation method for large space-scale, low-frequency plasma phenomena, "Computer Space Plasma Physics: Simulation Techniques and Software" Chapter 3, Terra Sci.Publ.Co. (Tokyo, 1992).
44. M.Tanaka, T.Sato and A.Hasegawa, Excitation of kinetic Alfven waves by resonant mode-conversion and longitudinal heating of magnetized plasmas, Phys.Fluids, B1, 325-332 (1989).
45. M.Tanaka, Macroscale implicit electromagnetic particle simulation of magnetized plasmas, J.Comput.Phys., 79, 209-226 (1988).
46. M.Tanaka, T.Sato and A.Hasegawa, Excitation of kinetic Alfven waves and longitudinal heating of magnetized plasmas, Nucl.Fusion Suppl., 3, 527-533 (1988).
47. M.Tanaka, T.Sato and A.Hasegawa, Macroscale particle simulation of kinetic Alfven waves, Geophys.Res.Lett., 14, 868-871 (1987).
48. M.Tanaka, T.Hayashi K.Harafuji, Y.Nakayama and T.Sato, Simulation studies of tokamak dynamics, Nucl.Fusion Suppl., 2, 65-74 (1986).
49. M.Tanaka and T.Sato, Macroscale particle simulation of relativistic electron beam injection into a magnetized plasma channel, Phys.Fluids, 29, 3823-3831 (1986).

50. D.Winske, M.Tanaka, C.S.Wu and K.Quest, Plasma heating at collisionless shocks due to the kinetic cross-field streaming instability, J.Geophys.Res., 90, 123-136 (1985).
51. M.Tanaka, Simulations of heavy ion heating by electromagnetic ion cyclotron waves driven by proton temperature anisotropies, J.Geophys.Res., 90, 6459-6468 (1985).
52. C.S.Wu, D.Winske, Y.M.Zhou, S.T.Tsai, P.Rodriguez, M.Tanaka, K.Papadopoulos, A.Akimoto, C.S.Lin, M.M.Leroy and C.C.Goodrich, Microinstabilities associated with a high Mach number, perpendicular bow shock, Space Sci.Reviews, 37, 63-109 (1984).
53. S.T.Tsai, M.Tanaka, J.D.Gaffey, E.H.da Jornada, C.S.Wu and L.F.Ziebel, Effects of electron thermal anisotropy on the kinetic cross-field streaming instability, J.Plasma Physics, 32, 159-178 (1984).
54. M.Tanaka and K.Papadopoulos, Creation of high-energy electron tails by means of the modified two-stream instability, Phys.Fluids, 26, 1697-1699 (1983).
55. M.Tanaka, C.C.Goodrich, D.Winske and K.Papadopoulos, A source of the back-streaming ions in the foreshock region, J.Geophys.Res., 88, 3046-3054 (1983).
56. M.Tanaka and T.Sato, Simulation of lower-hybrid-drift instability and anomalous resistivity in magnetic neutral sheet, J.Geophys.Res., 86, 5541-5552 (1981).
57. M.Tanaka and T.Sato, Multiple-excitation of lower-hybrid-drift waves in the neutral sheet, Phys.Rev.Lett., 47, 714-716 (1981).

[2] Books and Articles [著書, 解説]

1. M. Tanaka, Spin molecular dynamics by microwave magnetic field, <https://github.com/Mtanaka77/>, San Francisco, USA (Jan. 2026).
2. M. Tanaka, Electrostatic molecular dynamics of DNA transport in living human cells, <https://github.com/Mtanaka77/>, San Francisco, USA (July, 2025; revised).
3. M. Tanaka, AlmaLinux v.s. Debian OS's for water MD and ab-initio Siesta-4.1, <https://github.com/Mtanaka77/>, San Francisco, USA (Nov., 2024).
4. M. Tanaka, Molecular dynamics simulations of ice and methane hydrate by means of the rotation coordinate TIP5P-Ewald model, arXiv.org:2311.01182v8, Cornell University Library, USA (2024).
5. 計算機シミュレーション法の開発と一般公開, 1) Relativistic molecular dynamics

- simulation, 2) Largescale electromagnetic particle-in-cell simulation, 3) SIESTA-4.1 on vector and parallel clusters, 4) Molecular dynamics of water and ice by the TIP5P code, <https://github.com/Mtanaka77/> (with 4 articles, Aug. 2023),
6. 「情報スキル - 情報基礎と応用」(改訂版)(第 8 章インターネット、第 11,12 章 Excel の基礎と応用、第 13 章プレゼンテーション(Power Point)、第 14 章情報と社会、執筆・改訂)、中部大学工学部基礎教育科、情報スキル担当(学術図書出版社、2016 年-2022 年、3 月)
 7. "Microwave heating and collapse of methane hydrate by molecular dynamics simulations", M. Tanaka, M. Sato, and S. Nakatani, arXiv:1909.01024, Cornell University, USA (2019).
 8. 「金イオンによる炭素ナノチューブ爆発過程の分子動力学」, 田中基彦(「超高強度レーザーとプラズマの相互作用に関する物理」, 村上匡且, 田中基彦共著, プラズマ・核融合学会誌, 2017 年 9 月)
 9. 「自然世界の高分子ー物理現象から生命の起源まで」, 著者 A.グロスバーク, A.ホロフ, 日本語翻訳 田中基彦, 鵜田昌之, 坂上貴洋, 藤原慶, 柳澤実穂(英語原著: Giant Molecules – Here, There, and Everywhere, 2nd Edition; B5 判 pp.1-371, 吉岡書店, 2016 年 3 月)
 10. 「最新マイクロ波エネルギーと応用技術」, 田中基彦、「古典および密度汎関数・分子動力学法の基礎」(第 3.2.2 節); 田中基彦, M.Ignatennko, 「強磁性体・金属粉体のマイクロ波加熱」(第 3.3.1 節)(産業情報サービスセンター、B5 判 960 ページ, 2014 年 11 月)
 11. 田中基彦、「マイクロ波による物質加熱の物理機構」、マイクロ波化学プロセス技術 II 第 2 編 第 3 章(シーエムシー出版、2013 年 1 月、ISBN コード 978-4-7813-0706-0)
 - 12.. 「マイクロ波励起・高温非平衡反応場の科学ーマイクロ波エネルギーの基礎と新しい応用」、文部科学省科学研究費・特定領域研究成果公開、全体編集および執筆[第 1 章, 第 5 章](2012 年 3 月)
 13. 教科書「情報スキルー情報基礎と応用」、中部大学工学部共通教育科情報スキル担当・共同執筆 [第 8 章、第 11-14 章執筆](学術図書出版、2012 年, 2013 年 3 月)
 14. M. Tanaka, H. Kono, K. Maruyama, and Y. Zempo, Heating of liquid water and ice irradiated by far-infrared electromagnetic waves: Theoretical study by quantum mechanical molecular dynamics, 2nd GCMEA Conference, Long Beach, California, USA (2012); ISBN:978-0-9786222-1-3.
 15. M. Tanaka, H. Kono, K. Maruyama, and Y. Zempo, Theoretical studies of microwave heating of dielectric liquid and magnetic crystal by classical and quantum mechanical molecular dynamics simulations, p.185-188, Microwave and RF Power Applications (ed. J.Tao, Cepadues Publ., France, 2011).
 16. 田中基彦、高分子・生体系での静電相互作用の重要性: 電荷反転現象と膜孔のイオン通過、日本物理学会誌「最近の研究から」 vol.63, No.6, 441--445 (2008).
+表紙絵(同符号マクロイオンの融合、電荷反転、膜孔のイオン通過)

17. 田中基彦, 「手軽に作れる研究室専用スーパーコンピュータ: 高速通信ソフトウェアを利用した PC クラスタ計算機」, 日本物理学会誌「話題」, vol.59, No.12 898-902 (2004); Los Alamos Arxiv, Physics/0407152 (2004).
18. 田中基彦, 「電解質高分子における情報と計算機科学」, 高分子, **51**, 447 (2002).
19. 田中基彦, 「イオン性ソフトマターの分子動力学: 両極性高分子とマクロイオンの電荷逆転現象」, 固体物理, **37**, 207--219 + 表紙絵 (2002).
20. 田中基彦, 「高分子・生命・水における強結合プラズマ, 強結合クーロンプラズマの物理」 (第 5 章執筆), プラズマ・核融合, **75**, 1057--1068 (1999).
21. 田中基彦, 「ボルツマン方程式とナビエ・ストークス方程式」, 数学セミナー, **10**, 46--50 (日本評論社, 1995).
22. 田中基彦, 西川恭治, 「高温プラズマの物理学」 (丸善パリティ物理学コース), pp. 1-304, 第 1 刷 1991 年, 第 2 刷・改訂 1996 年

[3] Awards, Press Release [受賞、公的発表]

Rustum Roy Innovator Award

Given to “Theoretical Studies of Microwave Heating of Liquid and Solid Matters”, by M.Tanaka, H.Kono, K.Maruyama, M.Ignatenko, and M.Sato, *For the most significant contributions to scientific research in The Field of Microwave and RF Power Engineering (MAJIC), The International Federation of Associations*, at 1st Global Congress on Microwave Energy and Applications, August 4-8 (Shiga, Japan, 2008),

AMPERE Europe, The 2009 Best Paper Award

Given to “Classical and Quantum Mechanical Theories of Microwave Heating of Magnetic Materials”, by M.Tanaka, H.Kono, K.Maruyama, and M.Ignatenko, AMPERE Conference, Sep.7-11 (Karlsruhe, Germany, 2009).

読売新聞に掲載 (2013 年 4 月 22 日大阪本社版朝刊)

「カーボンナノチューブで陽子高速射出: がん放射線治療装置の小型化期待」

Editor's review in Physics Today (American Physics Society)

"Proton beams from a nanotube accelerator - Triggered by a laser pulse, a properly loaded nanogun could, at least in principle, fire a powerful stream of energetic protons", Physics Update (*May 2, 2013*).

[4] Research Funds [最近の予算獲得]

1. 特定領域研究 (計画研究代表者、領域事務局) 「マイクロ波と分子磁性相互作用の理論・分子動力学研究」平成 18-22 年度、合計額 8710 万円

2. JST シーズ発掘研究「小型高性能モーター開発のための金属粉末マイクロ波磁気加熱の研究」平成 20, 21 年度、合計額 400 万円
3. 特定領域研究（公募研究、代表者）「強レーザー場による溶液中での分子構造形成に関する分子動力学研究」平成 15-17 年度、合計額 410 万円

[5] Series Lectures [集中講義]

1. 「分子動力学法を用いた物質研究－クラスター計算機とその活用」（特別講義、大阪大学大学院工学研究科、June 27, 2013）.
2. 「分子動力学法を用いた物質研究－クラスター計算機の活用」（特別講義、大阪大学大学院工学研究科、June 21, 2012）.
3. 「古典・量子論的分子動力学法を用いた物質研究 - クラスター計算機の活用」（特別講義、大阪大学大学院工学研究科、June 9, 2011）
4. 高温プラズマとイオン性物質の分子動力学シミュレーション」（京都大学理学部、大学院理学研究科地球物理、Nov.20-22, 2006）
5. 「イオン性ソフトマターの物理化学と計算機シミュレーションの方法」（九州大学大学院理学研究科物理、Nov.24-26, 2004）
5. 「電磁多体系の物理： 高温プラズマとイオン性ソフトマター」（新潟大学大学院理学系研究科、Jan.20-22, 2004）
6. 「電磁多体系の物理学：クーロン強結合系」（静岡大学理学部物理、Dec.20-22, 2000）

[6] International Conferences, Invited Talks and Lectures

[国際会議・招待講演]

1. 2nd Global Congress on Microwave Energy Applications, 口頭発表、分科会座長, Heating of liquid water and ice irradiated by far-infrared electromagnetic waves: Theoretical study by quantum mechanical molecular dynamics, Motohiko Tanaka, Hirohiko Kono, Koji Maruyama, and Yasunari Zempo (July 24-27, 2012, Long Beach, USA)
2. 第 13 回 AMPERE 国際会議 口頭発表、分科会座長, Theoretical studies of microwave heating of dielectric liquid and magnetic crystal by classical and quantum mechanical molecular dynamics simulations, M. Tanaka, H. Kono, K. Maruyama, and Y. Zempo (Sep. 5-8, 2011, Toulouse, France).
3. 日本化学会シンポジウム 講演 「マイクロ波による物質加熱と変性機構の理論・分子動力学法による解明」（神奈川大学、平成 23 年 3 月 26 日）
4. Mechanism of microwave heating of dielectric and magnetic materials by means of atomistic theories, Materials Science & Technology Conference 2010 (Oct.20, 2010, Houston USA)

5. 日本物理学会、シンポジウム開催「マイクロ波・テラヘルツ波による加熱の物理機構」(大阪府立大学、平成 22 年 9 月 24 日)
6. 日本金属学会シンポジウム、基調講演「マイクロ波による物質加熱の分子シミュレーション」(京都、平成 21 年 9 月 16 日)
7. 第 12 回 AMPERE 国際会議 口頭発表、分科会座長, Classical and Quantum Mechanical Theories of Microwave Heating of Magnetic Materials, M. Tanaka, H. Kono, K. Maruyama, and M. Ignatenko (Sep.7-10, 2009, Karlsruhe, Germany)
8. プラズマ科学のフロンティア 特別講演、マイクロ波による物質加熱のメカニズム：古典および第一原理分子動力学法による研究 (核融合科学研究所、平成 21 年 9 月 4 日)
9. マイクロ波特定領域研修会 (領域事務局として開催)、話題「マイクロ波加熱の機構：理論研究でわかったこと、今後の課題」(蓼科高原、平成 21 年 8 月 26-28 日)
10. 依頼講演「なぜマイクロ波は誘電体・磁性体を効率的に加熱できるのか？－最近の理論研究から」、技術交流会 (技術交流財団)、名古屋 (Dec.26, 2008)
11. 国際会議 (口頭発表), Theoretical studies of microwave heating of liquid and solid materials, M.Tanaka, H. Kono, K. Maruyama, M. Ignatenko, and M. Sato, GCMEA 2008 (滋賀, Aug.4-8 (2008)).
12. “Our Research Project of Microwaves under Grant-in-Aid from MEXT, A03 Group: Theory of Microwave Heating”, Workshop on Theory of Microwave Heating, Science and Technology of Microwaves-Induced, Thermally Non-Equilibrium Reaction Fields, GCMEA 2008 (滋賀, Aug.4-8 (2008)).
13. 国際会議、依頼講演 (ショートコース)、「マイクロ波加熱の原理：誘電体・磁性体はなぜマイクロ波で加熱できるのか？」 Theoretical Investigations of the Mechanisms of the Microwave Heating, GCMEA 2008 (滋賀, Aug.4-8 (2008)).
14. 国際会議 ”Topical Lecture”、Theoretical study of microwave heating of dielectric and magnetic materials, M. Tanaka, H. Kono, K. Maruyama, M.Ignatenko, and M. Sato, Strong Microwaves: Science and Applications (Nizhny Novgorod, Russia, July 27-Aug.4 (2008)).
15. 招待講演： Microwave heating of polar liquid and magnetic materials: Mechanisms of heating, Recent Advances in Microwave Technology and Applications (Melbourne, Australia, Jan.29-31, 2008).
16. 招待講演： Ion acceleration by expansion of intense-laser-irradiated plasmas, M.Murakami, and M.Tanaka, Laser Optics2008 (St.Petersburg, Russia, June 2008).
17. セミナー： Microwave heating of metallic oxide powders: Mechanism of magnetic energy absorption, Materials Research Institute, Pennsylvania State

University (University Park, Nov.5, 2007).

18. Molecular dynamics study of microwave heating of materials: From water to metallic powders、理論計算科学セミナー、理化学研究所（平成 19 年 6 月 7 日）
19. 国際会議：Molecular dynamics study of microwave heating of water and related materials, Motohiko Tanaka and Motoyasu Sato, 11th AMPERE Conference (Sep.4-7, 2007, Oradea, Romania).
20. 国際会議：Microwave heating of materials: From polar liquid to magnetic oxides, M.Tanaka, M.Sato, M.Suzuki, M.Ignatenko and M.Yamashiro, 17th International Toki Conference (Toki, Oct.16, 2007).
21. 招待講演：DNA が内在する膜孔のイオン通過：静電気力が重要な現象、第 27 回表面科学講演大会、東京（平成 19 年 11 月 1 日）
22. 「強い静電相互作用によるナノ凝縮系・DNA の構造形成」、仙台プラズマフォーラム、プラズマナノ理工学基盤研究（代表：畠山力三教授、東北大学、Feb.23, 2006）
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24. 招待講演：Heating of water and ionic solutions by applied microwaves: Molecular dynamics study, 11th International Conference of Colloidal and Molecular Electro-optics (May 22-25, 2006、宇治)
25. 金属粉体のマイクロ波シミュレーション、鈴木基晴、田中基彦、佐藤元泰、第 6 回マイクロ波効果・応用国際シンポジウム（Nov.2-4, 2006、大垣）
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28. シンポジウム講演：生体高分子の強い静電気力による構造形成 (Structure Formation by Electrostatic Forces in Biological Systems)、Plasma Science Symposium 2005 (名古屋、Jan.26-28, 2005)
29. 特別講演：生体における強い静電相互作用、微粒子プラズマ研究会（東北大学、March 4, 2005）
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31. Molecular dynamics study of microwave heating of water and aqueous solutions, *Soft Matter 2005*, Yukawa Institute, Kyoto University (Aug.1-3, 2005)

32. **Oral Session:** First principles molecular dynamics study of plasma-wall interactions, T.Koga (Graduate University, D2) and M.Tanaka, 5th Assembly of Asia Plasma and Fusion Association, Jeju Island, Korea (Aug.29-31, 2005).
33. **講演会:** グラファイト破壊および膜孔を通過する DNA の物質科学、日本原子力研究所 第 975 回金曜セミナー (高崎研究所、平成 17 年 9 月 16 日)
34. **Oral Session:** DNA in nanopores: Strong electrostatic interactions in cellular dynamics processes, 4th International Conference of Slow Dynamics in Complex Systems, Sendai Kokusai Center (Nov.16-18, 2005)
35. Molecular dynamics simulations of microwave heating of ice and water, Seminar at Materials Research Institute, Penn State University (State College, USA, Nov.29, 2005).
36. **基調講演:** Materials Science of Molecular and Ionic Condensed Matters, 日本 MRS 学術講演会 (日本大学理工学部、Dec.11, 2005)
37. **集中講義:** 「電磁多体系の物理: 高温プラズマとイオン性ソフトマター」 (新潟大学大学院理学系研究科、Jan.20-22, 2004)
38. 田中基彦、第一原理分子動力学法による物質科学およびイオン性ソフトマター、「プラズマ科学における萌芽的研究の発掘会」(プラズマ核融合学会、March 19, 2004)
39. **招待講演、** 田中基彦、電荷逆転現象と荷電高分子: 溶液中クーロン強相関系としてのイオン性ソフトマター、物理学会領域 2,8,12 合同シンポジウム「クーロン系の構造形成: 電子から高分子まで」(九州大学、March 28, 2004)
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46. **Invited Talk,** M.Tanaka, Molecular dynamics of charge inversion in electrolyte solution, MRS International Conference on Advanced Materials (Pacifico Yokohama, Yokohama, Japan, October 8-13, 2003)

47. **Oral (Plenary)**, M.Tanaka, Charge inversion of a rod macroion in electrolyte solvent with polyelectrolyte counterions, The 3rd International Symposium on Slow Dynamics in Complex Fluids (Sendai, Japan, November 3-8, 2003)
48. 招待講演：M.Tanaka, Ionic Soft Condensed Matters: From Polymers to DNA (in English) 学際的新領域プラズマの基礎と応用 (H15 年度東北大学学内共同プロジェクト、Sendai, Japan, November 6, 2003)
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61. **Invited Seminar**, M.Tanaka, Numerical studies of multichain polyampholytes

and the effect of salt, Invited Seminar, Institut Charles Sadron (CNRS) (Strasbourg, Nov.20, 1999)

62. **Invited Seminar**, M.Tanaka, Present and future studies of polyampholytes, Max-Planck Institut fuer Polymerforschung (Mainz, Dec.6, 1999).
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66. **Invited Seminar**, M.Tanaka, A.Y.Grosberg, V.S.Pande, and T.Tanaka, Molecular dynamics study of polyampholytes, Universite de Louis Pasteur (Strasbourg, Nov. 28, 1997)
67. **Invited Seminar**, M.Tanaka, The origins of electrical resistivity in collisionless magnetic reconnection, CETP /CNRS (Velizy, Paris, Dec.4, 1997).
68. **Invited Lecture**, M.Tanaka, Magnetic reconnection in collisionless plasmas, 1st International Conference on "Open Problems in Charged Particle Transport" (CNRS, Paris, June 17-21, 1996).
69. **Invited Colloquium**, M.Tanaka, Low-frequency kinetic plasma phenomena in collisionless plasmas: Magnetic reconnection and planetary parallel shocks, Ecole Polytechnique Federale de Lausanne (Lausanne, June 24, 1996).
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72. M.Tanaka, Macro-particle simulation of collisionless magnetic reconnection: The importance of parallel electron transport, American Physical Society Meeting (Louisville, November 6-10, 1995).
73. **Invited Seminar**, M.Tanaka, An implicit particle simulation of kinetic-MHD plasmas in three dimensions, Ecole Polytechnique Federale de Lausanne (Lausanne, May 17, 1993).
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78. M.Tanaka, HIDDEN: A kinetic-MHD simulation method for inhomogeneous plasmas of three-dimensions, Seminar at Massachusetts Institute of Technology (Boston, Feb. 7, 1992).
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80. M.Tanaka and J.U.Brackbill, Simulation of the Kelvin-Helmholtz instability by two-dimensional implicit particle code, Fall Meeting of American Geophysical Union (San Francisco, Dec. 7-11, 1992)
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[7] その他

American Geophysical Union, Joined on May 1982; Medal for 30 Years, 2013.

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日本学術振興会・先導的研究開発委員会「電磁波励起非平衡反応場の物理化学と産業応用」（代表 和田雄二、東工大教授）、委員（平成 22 年度～24 年度）