

CV Resumé (*) of: Giorgio BENEDEK

Official address:

Università di Milano-Bicocca, Dipartimento di Scienza dei Materiali
Via Cozzi 53, I-20125 Milano, Italy
tel.: ++39 02 64485216, fax.: ++39 02 64485400,
e-mail: giorgio.benedek@unimib.it
webpage: <http://www2.mater.unimib.it/utenti/benedek/>

Date and place of birth: 4 February 1941, Bologna (Italy)




Nationality: Italian

Education:

- Doctor (Laurea) in Physics, 1965, University of Milano
- University Teaching Qualification (Libera Docenza) in Solid State Physics, 1970, University of Milano

Career/Employment:

Italian institutions: positions and teaching

- 1965-1970: Vol. Assistant at the chair of Physics, University of Milano (UNIMI)
 Exercises for Physics for Biological Sciences (undergrad. 1st year)
- 1966-1967: Post-doc at the Joint Research Centre (JRC) of the European Commission, Ispra (grant ARS).
- 1967-1985: Researcher, CNR - National Research Council, Research Unit in Milano
- 1970-1985: Lecturer (Professore Incaricato con Lib. Doc.) of Physics, University of Milano. Course:
 Physics for Biological Sciences (undergrad. 1st year)
- 1985-1986: Associate Professor of Structure of Matter at UNIMI. Course:
 Physics for Biological Sciences (undergrad. 1st year)
- 1986- 2011: Full Professor of Structure of Matter (FIS03) at
University of Milano (1986-1999). Courses:

- 📖 Physics of Semiconductors (Physics, 4th year)
- 📖 Electronic devices (Physics, 4th year)
- 📖 Structure of Matter (Materials Science, 2nd year)
- 📖 Solid State Physics (PhD in Physics)

University of Milano-Bicocca (UNIMIB) (1999-2011). Courses:




- 📖 Structure of Matter (Materials Science, 2nd year)
 - 📖 Physics of Materials I (Materials Science, 2nd year)
 - 📖 Structure of Matter, elements (Physics, 3rd year)
 - 📖 Structure of Matter, complements (Physics, 3rd year)
 - 📖 Surface Physics (Physics, 4th year)
- 1996-1999: 🏛️ Promoter and 1st Coordinator of the PhD School in Materials Science (XII-XV cycles) at the University of Milano, then at the University of Milano Bicocca.
 - 2016-: Emeritus Professor of Physics of Matter, University of Milano-Bicocca

Other teaching activity at UNIMIB:





- 2011-2012: Adjoint Professor (Professore a contratto). Course:
 - 📖 Physics of Materials I
- 2013 – : Introductory lecture for the credit: 📖 *Conoscenze utili per l'inserimento nel mondo del lavoro* (Materials Science, 1st year)
- 2012-2014: Lectures on 📖 *Hints and tips to write an article and to prepare a seminar* for the European Doctorate on Physics and Chemistry of Advanced Materials (PCAM).
- 2015-2016: “Corsi trasversali della Scuola Unica di Dottorato dell’UNIMIB”
Round table coordination on 📖 *Il ruolo della scienza nella società*, with Prof. Carlo Bottani, March 18, 2016.

and at other Italian institutions:

- 1987: Scuola Naz. GNSM-CISM, Castro Marina:
 - 📖 lectures on *Advanced Lattice Dynamics*
- 1988: Scuola Naz. GNSM-CISM, Parma:
 - 📖 lectures on *Dynamics of Solid Surfaces*
- 2003: Scuola Nazionale di Fisica della Materia (SNFM), Torino, Villa Gualino:
 - 📖 lectures on *The Science of Surfaces*
- 2003: UNIMI, Corso di Perfezionamento in Nanotecnologie; Course:
 - 📖 *Introduction to nanotechnologies*
- 2004-2005: Istituto Universitario di Studi Superiori (IUSS), University of Pavia; Course:
 - 📖 *Calculation and simulation of nanostructures*

- 2006-2007: Istituto Universitario di Studi Superiori (IUSS), University of Pavia; Course:  *Helium*
- 2009: University of Pavia: PhD School a.a. inauguration lecture:  *Exotic Carbons*
- 2013: University of Pavia: PhD School a.a. inauguration lecture:  *Fishing for bosons in the Fermi Sea*

Research and teaching abroad:

- Université de Liège, Belgium: Visiting Scientist (1974/1975)
- Max Planck Institut für Festkörper Forschung, MPI-FKF, Stuttgart, Germany - Visiting Scientist (1978-1979, sabbatical), then annual visits until 1987.
- University of Virginia: Visiting Professor (1981); lectures on  *Classical electromagnetism* (graduate)
- Facultés Universitaires Notre Dame de la Paix, Namur, Belgium - International Franqui Chair (1985); course on  *Dynamics of Solid Surfaces* (graduate)
- Max Planck Institut für Strömungsforschung (MPI-SF, now für Dynamik und Selbstorganisation, MPI-DS), Göttingen, Germany – Alexander-von-Humboldt (AvH) Senior Scientist (1990-1991). AvH re-invitations: 2004/2005 and 2012/13. Other periodic (annual) visits for collaboration from 1980 to present; lectures on  *Introduction to surface dynamics* (1980).
- Ikerbasque Visiting Professor at the Donostia International Physics Center (DIPC), Donostia / San Sebastián, Basque Country, Spain (2009/2010 - sabbatical leave). Other periodic (annual) visits to DIPC for collaboration from 2003 to present; lectures on  *Carbon structures* (graduate, 2009).




Honours and Awards


- International Francqui Chair, Belgium (1985)
- Alexander von Humboldt Forschungspreis, Germany (1990)
- Max Planck Prize, Germany (co-recipient with J. P. Toennies) (1992)
- Medal of the Fond National de la Recherche Scientifique, Brussels (1997)
- Foreign Member of the Royal Academy of Belgium (from 2000; emeritus from 2014)
- Effective Member of the Istituto Lombardo Accademia di Scienze e Lettere (from 2010 - Corresponding Member from 2006).
- Member of the Istituto di Studi Superiori Gerolamo Cardano (2005-)
- Fellow of the Italian Physical Society (2009-)
- Fellow of the European Physical Society (2010-)
- Festschrift for the 70th birthday: Special issue on *Dynamics of low-dimensional systems* edited by M. Bernasconi, S. Miret-Artés and J. P. Toennies, Journal of Physics: Condensed Matter **24**, no. 10 (2012).

- Medal “Lezione Voltiana”, University of Pavia (2014)
- International Prize for Physics of the National Academy of Lincei, Italy (co-recipient with D. S. Wiersma) (2014)
- Honorary Member of Centro Fermi, Rome (2016-)
- Emeritus Professor, University of Milano-Bicocca (2016-)
- European Physical Society Achievement Award (2018)

Principal organization activity

- general:

- Co-director at the *International School of Materials Science and Technology* (School Director: M. Balkanski) of 5 Courses/Workshops (1981-1989)
- Director of the *International School of Solid State Physics*, Ettore Majorana Foundation and Centre for Scientific Culture, Erice, Italy (1990-present, now celebrating the 70th Course)
- Coordinator of the International Centre for High Technology and New Materials (ICTM) of ICS-UNIDO (Trieste, 1990-1991)
- Italian Physical Society Board (Consiglio di Presidenza) member (1992-1994)
- National coordinator of the CNR Project "Growth, characterization and properties of fullerenic structures" (1993-1995)
-  Member and Scientific Secretary of the National Commission for Innovative Materials of the Ministry of University, Scientific and Technological Research of Italy (1994: MIUR, Minister: U. Colombo)
- Coordinator of the EEC Human Capital and Mobility Network "Vibrational Properties of Surfaces, Overlayers and Thin Films" including 8 European laboratories (1994-1997)
- National Coordinator of the INFM Advanced Research Project "CLASS" (1997-2000)
-  Scientific Council Member of Centro Modellistica Computazionale of CILEA (1996 – 2006) – President of the Scientific Council from 1997 to 2000 – Chairman of CAPI2000, Workshop on *High-performance calculus in Italy* and of CAPI2005 Workshop round-table *High-performance calculus: technology and applications*.
-  Member of the Scientific Board of the Silvio Tronchetti-Provera Foundation for Scientific and Technological Research (2001-2011)
- Seminario Matematico e Fisico di Milano, membro del Comitato Direttivo (2003-2009)
- Project supervisor of a Marie-Curie Industry Host Fellowship HPMT-CT-2001-00242 (2003-2004)
- Co-Director (with M. Gell-Mann, L. Pietronero and C. Tsallis) of the *International School of Complexity*, Ettore Majorana Foundation and Centre for Scientific Culture, Erice, Italy (2004-present)
- Member of the Scientific Panel of Centro Fermi, Rome (2006-)
- Member of the Reference Committee (Comitato di Riferimento) of the PhD School in Materials Engineering of the Politecnico di Milano (2007-2008)

- Member of the Board (Consiglio Direttivo) of the Riemann International School of Mathematics, c/o Politecnico di Milano (2009-2013), then c/o Villa Toeplitz of the Insubria University, Varese (2013-2017)
- Member of the International Scientific Council of the Donostia International Physics Center (DIPC), San Sebastian, Spain (2009-)
- Member of Board (Consiglio Direttivo) of the Istituto di Studi Superiori "Gerolamo Cardano" of the Insubria University (2014 -).
-  Co-promoter (with Profs. Massimo Masserini, (UNIMIB) and Mauro Ferrari) of the *International School of Nanomedicine*, Ettore Majorana Foundation and Centre for Scientific Culture, Erice, Italy (2016-present) and Co-Director with M. Masserini of the 1st Course (6-10 June 2016)

- *within the European Physical Society (EPS):*

- Condensed Matter Division Surface & Interface Section Board Member (1980-1985)
- Condensed Matter Division Board Member (1986-1992)
- Elected IOM Representative in the Council Member (1991-1993)
- Executive Board Member of the European Physical Society (1993-1998)
- Co-editor (1995-2002) and Advisory Editorial Board member (2002-2005) of *Europhysics Letters*
- Editorial Board member of *Europhysics News* (2002 - 2011)
- Co-editor of the *European Physical Journal B* (2000-2006)
- Editor in Chief of *EPL (Europhysics Letters)* (2013-2017)
- EPS-50 Committee member (2017-2018)

- *other editorial activities:*

- Editorial Board member of *Surface Science* (1995 – 2000)
- Editorial Board member of *Materials Science and Engineering B* (1992 – 2000)
- Topical Editor of *Il Nuovo Cimento D* (1992-2000)
- Editorial Board member of *Materials Science Forum* (TTP – Trans Tech Publications Inc. – Materials Science & Engineering, Pfaffikon, Switzerland) (2000-present)
- Editorial Board member of *Il Nuovo Saggiatore* (Italian Physical Society) (2001-present)
- Editorial Board member of *Il Giornale di Fisica* (Italian Physical Society, 2016-present)

Principal peer review activity:

- Member of the NATO special panel "Low-Dimensional Physics" (1988-1990)
- Member of the NATO - CRG Panel (1993-1996; Chairman during the last year)
- Member of the project evaluation panel of the Fonds National de la Recherche Scientifique, Belgium (1994-1997)

- Member of the Evaluation Panel of the Science & Technology Foundation of the S&T Ministry of Portugal (2000)
- External Examiner at the Trinity College, Dublin, for Materials Science (2002-2005)
- Peer reviewer for several institutions supporting research projects and positions: Ikerbasque Foundation (Spain), the European Research Council, the Ministry of Education, University and Research of Italy (ANVUR), and national bank Foundations (in particular: President of the Commission for PhD Projects of CARIPARO (2015-2017)).
- Outstanding Referee of the American Chemical Society (ACS) (2013) and of the American Physical Society (APS) (2014)

Main research areas:

- Physics of low-dimensional systems: surface dynamics, surface phonon spectroscopy, clusters and cluster assembled materials, theory of carbon structures, physics of supersonic atomic and cluster jets.
- Physics of quantum droplets and quantum solids: discovery and study of the geyser effect in the vacuum expansion of quantum solids, the super-solid state of helium, quantum diffusion in solid helium; superfluidity of quantum droplets.

Main achievements (the numbers refer to the main papers on the subject in the list of publications):

- Prediction of giant anharmonic effects in the dynamics of soft defects [2,3,13]
- First theory of Raman scattering from color centers [7] (with G.F. Nardelli)
- Theory of surface dynamics with the Green's function method [27,35]
- First realistic calculation of inelastic HAS from alkali halides [29,62]
- Prediction of the kinematical focussing in HAS [32]
- First evidence of two-phonon vibronics [50] (with I. Pollini)
- Magnetic-order induced Raman scattering in transition-metal compounds [51,119] (with G. Güntherodt)
- The modern theory of ferroelectricity as due to non-linear electron-phonon interaction [121,122,145] (with H. Bilz and A. Büssmann-Holder)
- Theory and HAS of surface phonon anomalies induced by electron-phonon interaction [86,123,126] (with H. Bilz and J. P. Toennies)
- Solving the Si(111) 55 meV surface-mode puzzle [140] (with L.Miglio, P. Ruggerone and P. Santini)
- Discovery of magnetization effects on surface phonons [182,274] (with E. Hulpke)
- Thin-film organ-pipe modes by HAS [185,337] (with J. P. Toennies and J. Ellis)
- First demonstration of superfluidity of He droplets [224] (with J.P. Toennies & A. Vilesov)
- Surface dynamics of layered crystals [54,201] (with Leo Miglio, Giovanni Onida, Paolo Ruggerone et al)

- Prediction and demonstration of novel focussing effects in HAS [216,223,237,244,348] (with S. Miret-Artès, M. Bertino, JPT, etc)
- Prediction of a monolithic luminescent Si clathrate [229] (with G. Onida)
- Development of a novel supersonic cluster-beam deposition system [284,293] (with P. Milani and H. Vahedi-Tafreshi)
- Prediction and synthesis of carbon schwarzites [259,263,289,295] (with L. Colombo and P. Milani)
- Prediction of exotic forms of carbon (clathrates) [231,238,267,296,321] (with M. Bernasconi, L. Colombo, et al)
- First evidence of surface Lau-Kohn forces by HAS [304] (with J. P. Toennies and A. Graham)
- Discovery of the geyser effect in solid-He vacuum expansion [312] and of solid-helium superflow [404] (with J. P. Toennies, et al).
- Demonstration of rotation-flip spectroscopy with H₂ inelastic scattering [311] (with J. P. Toennies and F. Traeger)
- First determination of the branching ratio in a doubly-forbidden beta decay [317] (with E. Fiorini and his group)
- Discovery of localized collective excitations in Bose [339,340] and Fermi [341] quantum droplets (with V. Hizhnyakov, A. Vilesov and J.P. Toennies)
- Electron-phonon coupling from HAS: mode- λ spectroscopy [360], and e-p coupling strength from the DW factor [405] (with J.P. Toennies, E. Chulkov, P. Echenique, M. Bernasconi, J. R. Manson and S. Miret-Artès)
- The plasmon tsunami [344,352] (with A. Lucas, M. Sunjic and P. Echenique)
- The quantum sonars: probing deep interface phonons by HAS-excited hole-electron pairs [387] and deep Dirac fermions by light-excited Sezawa phonons [407].

Note:

(*) Further biographic information in the Festschrift introduction by M Bernasconi, S Miret-Artès and J P Toennies, *Journal of Physics: Condensed Matter* **24**, 100401 (2012), and a scientific autobiography in G. Benedek, *ibidem* **24**, 100402 (2012).

Chronological list of scientific publications of Giorgio Benedek

(red: international peer reviewed journals;
blue: books (author or editor) and book chapters;
green: conference and intern. school proceedings;
black: other scientific publications)

1965

1. G. Benedek and G.F. Nardelli, "Teoria dell'assorbimento infrarosso di cristalli ionici attivati con impurezze sostituzionali: modi vibrazionali localizzati e risonanti", *Suppl. Nuovo Cimento*, III-4, 1172 (1965).

1966

2. G. Benedek and G.F. Nardelli, "Anomalous Stress Effects in Resonant Mode Infrared Absorption", *Phys. Rev. Letters*, 16, 517 (1966)

3. G. Benedek and G.F. Nardelli, "Evidence for Resonant Mode Sidebands in Alkali Halides", *Phys. Rev. Letters* 17, 1136 (1966).

4. G. Benedek and G.F. Nardelli, "Local Modes and Resonant Scattering of Lattice Waves due to Point Defects: Optical and Thermal Properties of Imperfect Crystals" in *Calculation of the Properties of Vacancies and Interstitials*, Nat. Bureau of Standards, Misc. Publ. 287 (1966) p. 161.

5. G. Benedek and G.F. Nardelli, "Anharmonicity of Resonant Modes" in *Atti del Convegno Nazionale sulle Proprietà Ioniche ed Elettroniche degli Alogenuri Alcalini*, R. Fieschi and G. Spinolo eds. (IDAMI Milano 1966) p. 150.

6. G. Benedek and G.F. Nardelli, "First-Order Raman Scattering by Color Centers" in *Atti del Convegno Nazionale sulle Proprietà Ioniche ed Elettroniche degli Alogenuri Alcalini*, R. Fieschi and G. Spinolo eds. (IDAMI Milano 1966) p. 160.

1967

7. G. Benedek and G.F. Nardelli, "Raman Scattering by Color Centers", *Phys. Rev.* 154, 872 (1967).

8. G. Benedek and G.F. Nardelli, "Lattice Response Functions of Imperfect Crystals: Effects due to a Local Change of Mass and Short Range Interaction", *Phys. Rev.* 155, 1004 (1967).

9. G. Benedek, "Lattice Dynamics and Thermal Properties of LiH and LiD Crystals" *Solid State Comm.* 5, 101 (1967).

1968

10. G. Benedek and G.F. Nardelli, Bulk and Local Elastic Constants of Imperfect Crystals" Phys. Rev. 167, 837 (1968).

11. G. Benedek and G.F. Nardelli, "Lattice Dynamics of Imperfect Alkali Halides", J. Chem Phys. 48, 5242 (1968).

12. G. Benedek and A.A. Maradudin "Theory of IR Lattice Vibration Absorption by Gap Modes and Resonance Modes in KI", J. Phys. Chem. Solids 29, 423 (1968).

13. G. Benedek, "Low-Lying Resonant Modes in Anharmonic Crystals" in Proc. of the First Int. Conference on Localized Excitations in Solids, Irvine 1967, ed. by R.F. Wallis (Plenum Press, New York 1968) p. 101.

14. G. Benedek, R.F. Wallis, A.A. Maradudin, I. P. Ipatova, A. A. Klochickin and W. C. Overton Jr., "On the Thermodynamic Equilibrium of Gas Plus Crystal with Isotopic Defects" in Proc. of the First Int. Conference on Localized Excitations in Solids, Irvine 1967, ed. by R.F. Wallis (Plenum Press, New York 1968), p. 627.

15. G. Benedek, R.F. Wallis, I.P. Ipatova, A.A. Maradudin and W.C.Overton, Zh. Eksp. Teor. Fiz. 55, 369 (1968) (in Russian).

15a. G. Benedek, R.F. Wallis, I.P. Ipatova, A.A. Maradudin and W.C.Overton, "Thermodynamic Equilibrium of a System of Gas and Crystal with Isotopic Defects", Sov. Physics (JETP) 28, 193 (1969) [English translation]

1969

16. G. Benedek, R.F. Wallis, I.P. Ipatova, A.A. Klochikin and A.A. Maradudin, Fizika Tberdogo Tela 11, 382 (1969) (in Russian)

16a. G. Benedek, R.F. Wallis, I.P. Ipatova, A.A. Klochikin and A.A. Maradudin "Thermodynamic Equilibrium of a Diatomic Gas with a Diatomic Crystal" Sov. Phys. Sol. State 11, 303 (1969) [English translation].

17. G. Benedek and E. Mulazzi, "A Theoretical Investigation of the F-Center Raman Spectra in NaBr: First and Second Order Processes" in *Light Scattering Spectra of Solids*" ed. by G.B. Wright (Springer Verlag, New York, 1969) p. 531.

18. G. Benedek and E. Mulazzi, "Optical Response Functions of the F Center", Phys. Rev. 179, 906 (1969).

1970

19. G. Benedek, "Isotope Effects in Defect Induced Infrared Absorption" Phys. Status Solidi 42, 389 (1970).

1971

20. G. Benedek, "Comments on the Theory of Anharmonic and Tunnel-Phonon Interactions in KCl:Li⁺", Phys. Status Solidi 43, 509 (1971).

21. G. Benedek and N. Terzi, "The E-P Interaction Induced by Tl^+ in K Halides in Connection with the First Order Raman Spectra" in *Light Scattering in Solids*, M. Balkanski ed. (Flammarion, Paris 1971) p. 291.

1972

22. G. Benedek, "Dynamical Properties of Interstitials" in *Physics of Impurity Centres in Crystals*, G. Zavt ed. (Acad. of Sciences of the Estonian SSR, 1972) p. 181.

23. G. Benedek, "Dipole Correlation among Off-Center Impurities" in *Physics of Impurity Centres in Crystals*, G. Zavt ed. (Acad. of Sciences of the Estonian SSR, 1972) p. 221.

24. G. Benedek and N. Terzi, "An Evaluation of Raman Spectra, Phonon Relaxation Rate, Infrared and UV Absorptions Induced by Tl^+ Substitutional in KI" in *Physics of Impurity Centres in Crystals*, G. Zavt ed. (Acad. of Sciences of the Estonian SSR, 1972) p. 321.

25. G. Benedek, "Acustica" in *La Fisica e la Matematica per la Biologia*, G. Bellini ed. (Istituto Editoriale Universitario, Milano 1972) vol. 2.

1973

26. G. Benedek and N. Terzi, "Phonon Properties and Electron-Phonon Interaction in Thallium-doped Potassium Halides", *Phys. Rev. B* **8**, 1746 (1973).

27. G. Benedek, "Surface Lattice Dynamics of Ionic Crystals by the Green Function Method" *Phys. Status Solidi* **58**, 661 (1973).

1974

28. M. Petrera, F. Trifirò and G. Benedek, "Photostimulated Adsorption and Desorption of Oxygen from SnO_2 and TiO_2 : Some New Results and a Phenomenological Model", *Japan J. Appl. Phys. Suppl.* **2**, pt. 2, 315 (1974).

29. G. Benedek and G. Seriani, "A Theoretical Study of the One-Phonon Inelastic Scattering of Atoms from the (001) Surface of LiF" *Japan J. Appl. Phys. Suppl.* **2**, pt. 2, 545 (1974).

30. G. Benedek, "Surface Lattice Dynamics" in *Dynamic Aspects of Surface Physics*, F.O. Goodman ed. (Compositori, Bologna 1974), p. 605 (review).

1975

31. G. Benedek, S. Boffi, G. Caglioti and J.C. Bilello, "Surface Energy for Brittle Fracture of Alkali Halides from Lattice Dynamics", *Surface Sci.* **48**, 561 (1975).

32. G. Benedek, "Van Hove Singularities of the Surface Phonon Density from Inelastic Reflection of Atoms", *Phys. Rev. Letters* **35**, 234 (1975).

1976

33. G. Benedek, "The Dynamical Approach to Lattice Instabilities: Fracture and Surface Reconstruction" in *Atomic Structure and Mechanical Properties of Metals*, J. Bilello and G. Caglioti eds. (Compositori, Bologna 1976) p. 516.
34. G. Benedek and G.P. Brivio, "Dynamics of Quantum Impurities in Harmonic Crystals by the Hartree Method and its Application to Mobile Adsorbates", *J. Phys. C: Sol. St. Phys.* 9, 2709 (1976).
35. G. Benedek, "The Green Function Approach to the Surface Lattice Dynamics of Ionic Crystals", *Surface Sci.* 61, 603 (1976).

1977

36. G. Benedek and G. Boato, "Scattering of Thermal Atoms from Crystal Surfaces, *Europhys. News*, 8 /4 (1977) 5-8.
37. F. Garbassi, G. Petrini, L. Pozzi, G. Benedek and G. Parravano, "An AES Study of the Surface Composition of Cobalt Ferrites", *Surface Sci.* 68, 286 (1977).
38. G. Benedek, F. Celentano and G.L. Monticelli, "Elettricità e Magnetismo" (Ed. Libreria dello Studente, Milano 1977-1984; 2.a Ed.: CLUP, Milano 1984 -).
39. N. Burriesci, A. Nannetti, M. Petrera, S. Pizzini, G. Benedek and L. Biasutti, "Comparison of Structural and Magnetic Properties of Zn/Mn Ferrites Prepared by Wet-Chemical and Ceramic Methods" *Materials Chem.* 2, 241 (1977);
- 39a G. Benedek and E. Mulazzi, "Resonant Raman Scattering for F-Centers in NaF" *Proc. Int. Conf. on Defects in Insulating Crystals*, R. F. Wood, ed., Conf. 771002, (ORNL-EDRA-NSF-ORN, 1977) 39.

1978

40. G. Benedek and F. Galimberti, "Surface Lattice Dynamics of Potassium Halides" *Surface Sci.* 71, 87 (1978). *Erratum*: *Surface Sci.* 118, 713 (1982).
41. G. Benedek, F. Garbassi, G. Petrini and G. Parravano, "Study of the Equilibrium Surface Composition of $\text{Co}_{1-y}\text{Fe}_{2+y}\text{O}_4$: I", *J. Phys. Chem. Solids* 39, 637 (1978).
42. G. Benedek, F. Garbassi, G. Petrini and G. Parravano, "Study of the Equilibrium Surface Composition of $\text{Co}_{1-y}\text{Fe}_{2+y}\text{O}_4$: II", *J. Phys. Chem. Solids* 39, 645 (1978).
43. G. Benedek, "Surface Lattice Dynamics of Potassium Halides by the Green Function Method" in *Lattice Dynamics*, ed. by M. Balkanski (Flammarion, Paris 1978) p. 308.
44. G. Benedek, I. Pollini and G. Spinolo, "The Vibrational Structure in the Crystal Field Electronic Transitions of Layered 3d Metal Halides" in *Lattice Dynamics*, ed. by M. Balkanski (Flammarion, Paris 1978) p. 68.

45. G. Benedek and N. Garcia, "Theory of Inelastic Scattering of Atoms from a Hard-Corrugated Surface" *Nederlands Tijdschrift voor Vacuumtechniek*, 16, 344 (1978).

46. N. Burriesci, A. Nannetti, M. Petrera, S. Pizzini, G. Benedek and L. Biasutti, "Comparison of Structural and Magnetic Properties of Zn/Mn Ferrites Prepared by Wet-Chemical and Ceramic Methods" *Ber. Dt. Keram. Ges.* **55** (1978) 290.

1979

47. G. Benedek and N. Garcia, "Theory of the One-Phonon Scattering of Atoms from a Hard Corrugated Surface", *Surface Sci.* 80, 543 (1979).

48. C.T. Walker and G. Benedek, "Pre-Resonant Enhancement of the Raman Scattering from $KI:TI^{+}$ " *Solid State Comm.* 32, 145, (1979)

49. A. Frey and G. Benedek, "Lattice Dynamics and Ionic Charge of VI_2 " *Solid State Comm.* 32, 305 (1979).

50. G. Benedek, I. Pollini, L. Piseri and R. Tubino, "Evidence of Two-Phonon Vibronic Progressions in Layered 3d-Metal Dihalides", *Phys. Rev.* 20, 4303 (1979).

51. G. Guntherodt, W. Bauhofer and G. Benedek, "Zone-Boundary Phonon Raman Scattering in VI_2 due to Modulation of Exchange Interaction", *Phys. Rev. Letters* 43, 1427 (1979).

1980

52. G. Guntherodt, G. Abstreiter, W. Bauhofer, G. Benedek and E. Anastassakis, "Magnetic Bragg Scattering in Antiferromagnets Observed through Raman Scattering from Phonons", *J. Magnetism and Magnetic Materials*, 15-18, 777 (1980).

53. H. Bilz, A. Bussmann, G. Benedek, H. Buttner and D. Strauch, "Microscopic Model of Ferroelectric Soft Modes" *Ferroelectrics* 35, 339 (1980).

54. G. Benedek and A. Frey, "Lattice Dynamics of Layered Transition Metal Dihalides", *Phys. Rev. B* 21, 2482 (1980).

55. G. Benedek and V.R. Velasco, "Lattice Vibrations at Real Interfaces", *Proc. 4th Int. Conf. on Solid Surfaces, Cannes 1980 *Le Vide, Le Couches Minces* Suppl.* 201, 738 (1980).

56. G. Benedek and N. Garcia, "Observability of Zone-Boundary Phonons in Atom-Scattering Time-of-Flight Spectra" *Proc. 4th Int. Conf. on Solid Surfaces, Cannes 1980, *Le Vide, Le Couches Minces* Suppl.* 201, 818 (1980).

57. I. Pollini, G. Spinolo and G. Benedek, "Vibrational Structure of Crystal-Field Spectra in Layered 3d-Metal Halides" *Phys. Rev. B* 22, 6369 (1980).

58. W. Bauhofer, G. Guntherodt, E. Anastassakis, A. Frey and G. Benedek, "Raman Scattering and Far-Infrared Studies of the Vanadium Dihalides with Layered Structure", *Phys. Rev. B* 22, 5873 (1980).

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