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Education Information

Doctorate, Ihsan Dogramaci Bilkent University, Faculty Of Science, Department Of Physics, Turkey 1990 - 1994

Postgraduate, Ihsan Dogramaci Bilkent University, Faculty Of Science, Department Of Physics, Turkey 1987 - 1990

Undergraduate, Middle East Technical University, Faculty of Engineering, Elektrik-Elektronik Mühendisliği Bölümü, Turkey 1982 - 1987

Dissertations

Doctorate, Investigation of Si_{1-x}Gex alloy formation by using STM, Bilkent Üniversitesi, Fen Fakültesi, Fizik Bölümü, 1994

Postgraduate, Construction of a scanning tunneling microscope and first results, Bilkent Üniversitesi, Fen Fakültesi, Fizik Bölümü, 1990

Academic Titles / Tasks

Professor, Middle East Technical University, Faculty of Arts and Sciences, Department of Physics, 2014 - Continues

Professor, Sabanci University, Faculty Of Engineering And Natural Sciences, Department Of Natural Sciences And Engineering Program, 2008 - 2013

Professor, Ihsan Dogramaci Bilkent University, Faculty Of Science, Department Of Physics, 2006 - 2008

Associate Professor, Ihsan Dogramaci Bilkent University, Faculty Of Science, Department Of Physics, 2002 - 2006

Assistant Professor, Ihsan Dogramaci Bilkent University, Faculty Of Science, Department Of Physics, 1999 - 2002

Lecturer PhD, University of Oxford, Department Of Materials, 1998 - 1999

Lecturer PhD, University of Oxford, Department Of Materials, 1997 - 1998

Lecturer PhD, University of Bath, Science, School Of Physics, 1994 - 1997

Research Assistant, Ihsan Dogramaci Bilkent University, Faculty Of Science, Department Of Physics, 1987 - 1994

Advising Theses

ORAL A., Transparent graphene anodes for organic light emitting diodes, Doctorate, P.SHARIF(Student), 2021

ORAL A., Graphene based flexible hall sensors, Doctorate, U.YİĞİT(Student), 2021

ORAL A., Ultra-high-resolution low-temperature magnetic force microscopy, Postgraduate, A.Badami(Student), 2019

ORAL A., TOPOLOJİK YALITKANLARIN VE TOPOLOJİK SÜPERİLETKENLERİN MANYETİK ÖZELLİKLERİNİN TARAMALI UÇ MİKROSKOPLARI (TUM) TEKNİKLERİ İLE ARAŞTIRILMASI, Doctorate, K.ÇELİK(Student), 2017

ORAL A., Non-contact atomic force microscope in ultra high vacuum using radiation pressure excitation of cantilever with Fabry-Perot interferometer, Postgraduate, E.KARAGÖZ(Student), 2017

ORAL A., Non-contact atomic force microscope operation in ultra high vacuum using radiation pressure excitation of cantilever, Postgraduate, Y.UYSALLI(Student), 2016

ORAL A., Determination of photon momentum transfer between different mediums using interferometry of an angled silica fiber filament, Postgraduate, E.ÖZGÖNÜL(Student), 2016

ORAL A., Design of a self-aligned, high resolution, low temperature (30 mK - 300 K) magnetic force microscope, Doctorate, Ö.KARCI(Student), 2015

ORAL A., Development, fabrication and characterization of graphene and bismuth hall sensors for scanning hall probe microscopy, Doctorate, S.SONUŞEN(Student), 2015

ORAL A., Design of an advanced atomic force microscope control electronics using FPGA, Postgraduate, İ.KEHRİBAR(Student), 2013

ORAL A., Mechanically exfoliated single and multilayer graphene sheets and graphene field effect transistor, Postgraduate, S.MANUKYAN(Student), 2009

ORAL A., Development of nano Hall sensors for high resolution scanning Hall probe microscopy, Doctorate, M.DEDE(Student), 2008

ORAL A., Investigation of lateral forces in dynamic mode AFM/STM, Doctorate, M.ATABAK(Student), 2007

ORAL A., Scanning hall probe microscopy (SHPM) using quartz crystal AFM feedback, Postgraduate, K.ÜRKMEN(Student), 2005

ORAL A., Fabrication and characterization of GaAs and InAs hall sensors, Postgraduate, S.ÖZDEMİR(Student), 2004

ORAL A., Fabrication and characterization of bismuth hall sensors at room temperature, Postgraduate, G.BAYER(Student), 2003

ORAL A., Construction of an atomic force microscope operating in air and liquid, Postgraduate, M.KARAKÖSE(Student), 2003

ORAL A., Investigation of the magnetic properties of BSCCO superconductors with scanning hall probe microscope, Postgraduate, M.DEDE(Student), 2002

ORAL A., Simultaneous STM/ AC-AFM investigation of clean Si(001)-(2x1) surface and Ge epitaxial growth on Si(001)-(2x1), Postgraduate, M.ATABAK(Student), 2001

ORAL A., Atomic resolution imaging and force spectroscopy of silicon surfaces with atomic force microscopy, Doctorate, H.ÖZGÜR(Student), 2001

ORAL A., Microfabrication of micro hall sensors on GaAs and InSb for scanning hall probe microscopy, Postgraduate, M.MURAT(Student), 2001

Published journal articles indexed by SCI, SSCI, and AHCI

- I. **Photovoltaic Response of Liquid Phase Exfoliated Graphene - MoS₂ Heterostructures**
Javaid A., Karamat S., Khalique U., Naseer H., Sharif P., ORAL A., Akram R.
Journal of the Physical Society of Japan, vol.93, no.8, 2024 (SCI-Expanded)
- II. **Efficient photocatalytic activity of Mo-doped ZnO-In₂O₃ type-II staggered heterostructure for dye degradation**
Anwar S., Naeem M., Karamat S., Bhopal M., Bhatti A., ORAL A.
International Journal of Environmental Science and Technology, vol.21, no.7, pp.6093-6106, 2024 (SCI-Expanded)
- III. **Chemical Interactions of Nano Islandic Graphene Grown on Titanium Dioxide Substrates by Chemical Vapor Deposition**
Karamat S., Khalique U., Usman A., Javaid A., ORAL A.
ARABIAN JOURNAL FOR SCIENCE AND ENGINEERING, vol.47, no.6, pp.7779-7788, 2022 (SCI-Expanded)
- IV. **An Effective Route for the Growth of Multilayer MoS₂ by Combining Chemical Vapor Deposition and**

Wet Chemistry

Almohaimeed Z. M., Karamat S., Akram R., Sarwar S., Javaid A., ORAL A.

ADVANCES IN CONDENSED MATTER PHYSICS, vol.2022, 2022 (SCI-Expanded)

- V. **Synthesis of Graphene-MoS₂ composite based anode from oxides and their electrochemical behavior**
Sarwar S., Karamat S., Saleem Bhatti A., Kadri Aydinol M. K., ORAL A., Hassan M. U.
Chemical Physics Letters, vol.781, 2021 (SCI-Expanded)
- VI. **Solubility Enhancement of Fe in ZnO Nanoparticles Prepared by Co-Precipitation Method**
Musharaf M., Karamat S., Hassan M. U., Khalique U., ORAL A., Behjat A. B., Akram R., Almohaimeed Z.
Journal of Superconductivity and Novel Magnetism, vol.34, no.10, pp.2633-2642, 2021 (SCI-Expanded)
- VII. **Interpretation of SARS-CoV-2 behaviour on different substrates and denaturation of virions using ethanol: an atomic force microscopy study**
ÇELİK Ü., ÇELİK K., Celik S., ABAYLI H., ŞAHNA K., TONBAK Ş., AŞÇI TORAMAN Z., ORAL A.
RSC ADVANCES, vol.10, no.72, pp.44079-44086, 2020 (SCI-Expanded)
- VIII. **Chemical vapor deposition of molybdenum disulphide on platinum foil**
Karamat S., Hassan M. U., Pan J. S., Tabassam L., ORAL A.
MATERIALS CHEMISTRY AND PHYSICS, vol.249, 2020 (SCI-Expanded)
- IX. **1 fm/root Hz noise level low temperature Fabry-Perot atomic force/magnetic force microscope operating in 4-300 K temperature range**
Karc O., Celik U., Oral A.
REVIEW OF SCIENTIFIC INSTRUMENTS, vol.91, no.1, 2020 (SCI-Expanded)
- X. **Multilayer graphene growth on polar dielectric substrates using chemical vapour deposition**
KARAMAT S., Celik K., Zaman S. S., ORAL A.
APPLIED SURFACE SCIENCE, vol.442, pp.720-725, 2018 (SCI-Expanded)
- XI. **Non-destructive patterning of 10nm magnetic island array by phase transformation with low-energy proton irradiation**
Dutta T., PATHAK S., ASBAHİ M., Celik K., Lee J. M., Yang P., Saifullah M. S. M., ORAL A., Bhatia C. S., CHA J., et al.
APPLIED PHYSICS LETTERS, vol.111, no.15, 2017 (SCI-Expanded)
- XII. **Growth of nano-graphene on SrTiO₃ (110) substrates by chemical vapour deposition**
KARAMAT S., Celik K., ORAL A.
MATERIALS CHEMISTRY AND PHYSICS, vol.200, pp.187-195, 2017 (SCI-Expanded)
- XIII. **Radiation pressure excitation of a low temperature atomic force/magnetic force microscope for imaging in 4-300 K temperature range**
Celik U. L., KARCI O., UYSALLI Y., Özer H. T., ORAL A.
REVIEW OF SCIENTIFIC INSTRUMENTS, vol.88, no.1, 2017 (SCI-Expanded)
- XIV. **3D scanning Hall probe microscopy with 700 nm resolution**
DEDE M., AKRAM R., ORAL A.
APPLIED PHYSICS LETTERS, vol.109, no.18, 2016 (SCI-Expanded)
- XV. **Graphene/SrTiO₃ hetero interface studied by X-ray photoelectron spectroscopy**
KARAMAT S., KE C., Inkaya U. Y., AKRAM R., YILDIZ İ., Zaman S. S., ORAL A.
PROGRESS IN NATURAL SCIENCE-MATERIALS INTERNATIONAL, vol.26, no.4, pp.422-426, 2016 (SCI-Expanded)
- XVI. **Suitable alkaline for graphene peeling grown on metallic catalysts using chemical vapor deposition**
KARAMAT S., Sonusen S., ÇELİK Ü., UYSALLI Y., ORAL A.
APPLIED SURFACE SCIENCE, vol.368, pp.157-164, 2016 (SCI-Expanded)
- XVII. **Coalescence of few layer graphene grains grown by chemical vapor deposition and their stacking sequence**
Karamat S., Sonusen S., Dede M., Uysalli Y., Ozgonul E., ORAL A.
JOURNAL OF MATERIALS RESEARCH, vol.31, no.1, pp.46-54, 2016 (SCI-Expanded)
- XVIII. **Synthesis of few layer single crystal graphene grains on platinum by chemical vapour deposition**
Karamat S., Sonusen S., ÇELİK Ü., UYSALLI Y., Ozgonul E., ORAL A.
PROGRESS IN NATURAL SCIENCE-MATERIALS INTERNATIONAL, vol.25, no.4, pp.291-299, 2015 (SCI-Expanded)
- XIX. **Design of a self-aligned, wide temperature range (300 mK-300 K) atomic force microscope/magnetic**

force microscope with 10 nm magnetic force microscope resolution

Karci O., DEDE M., ORAL A.

REVIEW OF SCIENTIFIC INSTRUMENTS, vol.85, no.10, 2014 (SCI-Expanded)

- XX. **An ultra-low temperature scanning Hall probe microscope for magnetic imaging below 40 mK**
Karci O., Piatek J. O., Jorba P., DEDE M., Ronnow H. M., ORAL A.
REVIEW OF SCIENTIFIC INSTRUMENTS, vol.85, no.10, 2014 (SCI-Expanded)
- XXI. **Single layer graphene Hall sensors for scanning Hall probe microscopy (SHPM) in 3-300 K temperature range**
Sonusen S., KARCI Ö., DEDE M., Aksoy S., Oral A.
APPLIED SURFACE SCIENCE, vol.308, pp.414-418, 2014 (SCI-Expanded)
- XXII. **The effects of postdeposition annealing conditions on structure and created defects in Zn_{0.90}Co_{0.100} thin films deposited on Si(100) substrate**
Can M. M., Firat T., Shah S. I., Bakan F., Oral A.
JOURNAL OF MATERIALS RESEARCH, vol.28, no.5, pp.708-715, 2013 (SCI-Expanded)
- XXIII. **Bean-Livingston surface barriers for flux penetration in Bi₂Sr₂CaCu₂O₈+ δ single crystals near the transition temperature**
Mihalache V., Dede M., Oral A., Miu L.
PHYSICA C-SUPERCONDUCTIVITY AND ITS APPLICATIONS, vol.471, no.19-20, pp.563-565, 2011 (SCI-Expanded)
- XXIV. **Vortex phases in magnetic fields near ab-plane in Bi₂Sr₂CaCu₂O₈+ δ single crystal**
Mirkovic J., Saito T., Kashiwagi T., Takeya I., Kubo Y., Yamamoto T., Oral A., Kadowaki K.
PHYSICA C-SUPERCONDUCTIVITY AND ITS APPLICATIONS, vol.470, 2010 (SCI-Expanded)
- XXV. **Sub-Angstrom oscillation amplitude non-contact atomic force microscopy for lateral force gradient measurement**
Atabak M., Unverdi O., Özer H. Ö., Oral A.
APPLIED SURFACE SCIENCE, vol.256, no.5, pp.1299-1303, 2009 (SCI-Expanded)
- XXVI. **Vortex states in mesoscopic single crystals Bi₂Sr₂CaCu₂O₈+ δ in high magnetic fields**
Mirkovic J., Kubo Y., Saitou T., Takeya I., Yamamoto T., Oral A., Kadowaki K.
PHYSICA C-SUPERCONDUCTIVITY AND ITS APPLICATIONS, vol.469, no.15-20, pp.1119-1121, 2009 (SCI-Expanded)
- XXVII. **High sensitivity and multifunctional micro-Hall sensors fabricated using InAlSb/InAsSb/InAlSb heterostructures**
BANDO M., OHASHI T., Dede M., Akram R., Oral A., Park S. Y., SHIBASAKI I., HANDA H., SANDHU A.
JOURNAL OF APPLIED PHYSICS, vol.105, no.7, 2009 (SCI-Expanded)
- XXVIII. **Noncontact lateral-force gradient measurement on Si(111)-7 x 7 surface with small-amplitude off-resonance atomic force microscopy**
Atabak M., Unverdi O., Özer H. T., Oral A.
JOURNAL OF VACUUM SCIENCE & TECHNOLOGY B, vol.27, no.2, pp.1001-1005, 2009 (SCI-Expanded)
- XXIX. **Imaging capability of pseudomorphic high electron mobility transistors, AlGa_N/Ga_N, and Si micro-Hall probes for scanning Hall probe microscopy between 25 and 125 degrees C**
AKRAM R., Dede M., Oral A.
JOURNAL OF VACUUM SCIENCE & TECHNOLOGY B, vol.27, no.2, pp.1006-1010, 2009 (SCI-Expanded)
- XXX. **Variable Temperature-Scanning Hall Probe Microscopy With Ga_N/AlGa_N Two-Dimensional Electron Gas (2DEG) Micro Hall Sensors in 4.2-425 K Range Using Novel Quartz Tuning Fork AFM Feedback**
Akram R., Dede A., Oral A.
IEEE TRANSACTIONS ON MAGNETICS, vol.44, no.11, pp.3255-3260, 2008 (SCI-Expanded)
- XXXI. **Vortex imaging with varying temperature revealed by SHPM on Bi(2)Sr(2)CaCu(2)O₈+y**
Mihalache V., Dede M., Oral A., Sandu V.
PHYSICA C-SUPERCONDUCTIVITY AND ITS APPLICATIONS, vol.468, no.7-10, pp.832-836, 2008 (SCI-Expanded)
- XXXII. **Scanning Hall Probe Microscopy (SHPM) using quartz crystal AFM feedback**
Dede M., Uerkmen K., Girisen O., Atabak M., Oral A., Farrer I., Ritchie D.
JOURNAL OF NANOSCIENCE AND NANOTECHNOLOGY, vol.8, no.2, pp.619-622, 2008 (SCI-Expanded)
- XXXIII. **Solid or liquid? Solidification of a nanoconfined liquid under nonequilibrium conditions**

- Patil S., MATEI G., Oral A., Hoffmann P. M.
LANGMUIR, vol.22, no.15, pp.6485-6488, 2006 (SCI-Expanded)
- XXXIV. **Real-time imaging of vortex-antivortex annihilation in Bi₂Sr₂CaCu₂O₈+delta single crystals by low temperature scanning hall probe microscopy**
Dede M., Oral A., Yamamoto T., Kadowaki K., Shtrikman H.
JAPANESE JOURNAL OF APPLIED PHYSICS PART 1-REGULAR PAPERS BRIEF COMMUNICATIONS & REVIEW PAPERS, vol.45, no.3B, pp.2246-2250, 2006 (SCI-Expanded)
- XXXV. **A highly sensitive atomic force microscope for linear measurements of molecular forces in liquids**
PATIL S., MATEI G., DONG H., HOFFMANN P., Karakose M., Oral A.
REVIEW OF SCIENTIFIC INSTRUMENTS, vol.76, no.10, 2005 (SCI-Expanded)
- XXXVI. **Direct measurement of molecular stiffness and damping in confined water layers**
JEFFERY S., HOFFMANN P. M., PETHICA J. B., RAMANUJAN C., ÖZER H. Ö., Oral A.
PHYSICAL REVIEW B, vol.70, no.5, 2004 (SCI-Expanded)
- XXXVII. **Nano and micro Hall-effect sensors for room-temperature scanning hall probe microscopy**
SANDHU A., OKAMOTO A., SHIBASAKI I., Oral A.
MICROELECTRONIC ENGINEERING, pp.524-528, 2004 (SCI-Expanded)
- XXXVIII. **Low-amplitude, force gradient imaging of Cu(100) surface using tunnel current feedback**
ÖZER H. Ö., NORRIS A., Oral A., HOFFMANN P. M., PETHICA J. B.
NANOTECHNOLOGY, vol.15, no.2, 2004 (SCI-Expanded)
- XXXIX. **50 nm Hall sensors for room temperature scanning Hall probe microscopy**
SANDHU A., KUROSAWA K., DEDE M., Oral A.
JAPANESE JOURNAL OF APPLIED PHYSICS PART 1-REGULAR PAPERS BRIEF COMMUNICATIONS & REVIEW PAPERS, vol.43, no.2, pp.777-778, 2004 (SCI-Expanded)
- XL. **Room temperature scanning micro-Hall probe microscopy under extremely large pulsed magnetic fields**
Sandhu A., Masuda H., Oral A.
IEEE TRANSACTIONS ON MAGNETICS, vol.39, no.5, pp.3462-3464, 2003 (SCI-Expanded)
- XLI. **High-sensitivity noncontact atomic force microscope/scanning tunneling microscope (nc AFM/STM) operating at subangstrom oscillation amplitudes for atomic resolution imaging and force spectroscopy**
Oral A., GRIMBLE R., ÖZER H. Ö., PETHICA J.
REVIEW OF SCIENTIFIC INSTRUMENTS, vol.74, no.8, pp.3656-3663, 2003 (SCI-Expanded)
- XLII. **Integrated piezoresistive sensors for atomic force-guided scanning Hall probe microscopy**
BROOK A. J., BENDING S., PINTO J., Oral A., RITCHIE D., BEERE H., HENINI M., SPRINGTHORPE A.
APPLIED PHYSICS LETTERS, vol.82, no.20, pp.3538-3540, 2003 (SCI-Expanded)
- XLIII. **Measurement of energy dissipation between tungsten tip and Si(1 0 0)-(2 × 1) using sub-Ångström oscillation amplitude non-contact atomic force microscope**
Özer H. Ö., Atabak M., Oral A.
Applied Surface Science, vol.210, pp.12-17, 2003 (SCI-Expanded)
- XLIV. **Micromachined III-V cantilevers for AFM-tracking scanning hall probe microscopy**
BROOK A. J., BENDING S., PINTO J., Oral A., RITCHIE D., BEERE H., SPRINGTHORPE A., HENINI M.
JOURNAL OF MICROMECHANICS AND MICROENGINEERING, vol.13, no.1, pp.124-128, 2003 (SCI-Expanded)
- XLV. **Ultra-small oscillation amplitude nc-AFM/STM imaging, force and dissipation spectroscopy of Si(100)(2 × 1)**
Özer H. Ö., Atabak M., ORAL A.
Solid State Communications, vol.124, no.12, pp.469-472, 2002 (SCI-Expanded)
- XLVI. **Room temperature scanning micro-Hall probe microscope imaging of ferromagnetic microstructures in the presence of 2.5 Tesla pulsed magnetic fields generated by an integrated mini coil**
Sandhu A., Masuda H., Oral A.
JAPANESE JOURNAL OF APPLIED PHYSICS PART 2-LETTERS, vol.41, no.12A, 2002 (SCI-Expanded)
- XLVII. **Room-temperature scanning Hall probe microscope (RT-SHPM) imaging of garnet films using new**

high-performance InSb sensors

Oral A., Kaval M., DEDE M., MASUDA H., OKAMOTO A., SHIBASAKI I., SANDHU A.
IEEE TRANSACTIONS ON MAGNETICS, vol.38, no.5, pp.2438-2440, 2002 (SCI-Expanded)

- XLVIII. **Room temperature scanning Hall probe microscopy using GaAs/AlGaAs and Bi micro-hall probes**
SANDHU A., MASUDA H., Oral A., Bending S., YAMADA A., KONAGAI M.
Ultramicroscopy, vol.91, pp.97-101, 2002 (SCI-Expanded)
- XLIX. **Room temperature scanning Hall probe microscopy of localized magnetic field fluctuations on the surfaces of magnetic recording media, permanent magnets and crystalline garnet films in external bias fields**
Sandhu A., Iida N., Masuda H., Oral A., Bending S.
JOURNAL OF MAGNETISM AND MAGNETIC MATERIALS, vol.242, pp.1249-1252, 2002 (SCI-Expanded)
- L. **Simultaneous non-contact atomic force microscopy (nc-AFM)/STM imaging and force spectroscopy of Si(1 0 0)(2 × 1) with small oscillation amplitudes**
Özer H., Atabak M., Ellialtıglu R. M., Oral A.
Applied Surface Science, vol.188, pp.301-305, 2002 (SCI-Expanded)
- LI. **Energy dissipation in atomic force microscopy and atomic loss processes**
HOFFMANN P. M., JEFFERY S., PETHICA J. B., ÖZER H. Ö., Oral A.
PHYSICAL REVIEW LETTERS, vol.87, no.26, 2001 (SCI-Expanded)
- LII. **Bismuth nano-Hall probes fabricated by focused ion beam milling for direct magnetic imaging by room temperature scanning Hall probe microscopy**
SANDHU A., MASUDA H., KUROSAWA K., Oral A., BENDING S.
ELECTRONICS LETTERS, vol.37, no.22, pp.1335-1336, 2001 (SCI-Expanded)
- LIII. **Quantitative atom-resolved force gradient imaging using noncontact atomic force microscopy**
Oral A., GRIMBLE R., ÖZER H. Ö., HOFFMANN P., PETHICA J.
APPLIED PHYSICS LETTERS, vol.79, no.12, pp.1915-1917, 2001 (SCI-Expanded)
- LIV. **Room temperature sub-micron magnetic imaging by scanning Hall probe microscopy**
SANDHU A., MASUDA H., Oral A., BENDING S. J.
JAPANESE JOURNAL OF APPLIED PHYSICS PART 1-REGULAR PAPERS SHORT NOTES & REVIEW PAPERS, vol.40, pp.4321-4324, 2001 (SCI-Expanded)
- LV. **Direct magnetic imaging of ferromagnetic domain structures by room temperature scanning hall probe microscopy using a bismuth micro-hall probe**
SANDHU A., MASUDA H., Oral A., BENDING S. J.
JAPANESE JOURNAL OF APPLIED PHYSICS PART 2-LETTERS, vol.40, 2001 (SCI-Expanded)
- LVI. **Direct measurement of interatomic force gradients using an ultra-low-amplitude atomic force microscope**
HOFFMANN P. M., Oral A., GRIMBLE R. A., ÖZER H. Ö., JEFFERY S., PETHICA J. B.
PROCEEDINGS OF THE ROYAL SOCIETY A-MATHEMATICAL PHYSICAL AND ENGINEERING SCIENCES, vol.457, no.2009, pp.1161-1174, 2001 (SCI-Expanded)
- LVII. **Collective modes in flux line liquids**
Tanatar B., Oral A.
SUPERCONDUCTOR SCIENCE & TECHNOLOGY, vol.13, no.7, pp.968-970, 2000 (SCI-Expanded)
- LVIII. **Manipulation of atoms across a surface at room temperature**
FISHLOCK T. W., Oral A., EGDELL R. G., PETHICA J. B.
NATURE, vol.404, no.6779, pp.743-745, 2000 (SCI-Expanded)
- LIX. **Quantitative electrostatic force measurement in AFM**
JEFFERY S., Oral A., Pethica J. B.
Applied Surface Science, vol.157, no.4, pp.280-284, 2000 (SCI-Expanded)
- LX. **Interaction of bromine with Ni(110) studied by scanning tunnelling microscopy**
Fishlock T., Pethica J., Oral A., Egdell R., Jones F.
Surface Science, vol.426, no.2, pp.212-224, 1999 (SCI-Expanded)
- LXI. **Scanning Hall probe microscopy of ferromagnetic structures**

- Howells G., Oral A., Bending S., Andrews S., Squire P., Rice P., de Lozanne A., Bland J., Kaya I., Henini M.
 JOURNAL OF MAGNETISM AND MAGNETIC MATERIALS, vol.196, pp.917-919, 1999 (SCI-Expanded)
- LXII. **Direct observation of melting of the vortex solid in Bi₂Sr₂CaCu₂O₈+delta single crystals**
 Oral A., BARNARD J. C., BENDİNG S. J., KAYA I. I., OOI S., TAMEGAI T., HENİNİ M.
 PHYSICAL REVIEW LETTERS, vol.80, no.16, pp.3610-3613, 1998 (SCI-Expanded)
- LXIII. **Disorder-driven intermediate state in the lattice melting transition of Bi₂Sr₂CaCu₂O₈+delta single crystals**
 Oral A., Barnard J., Ooi S., Taoka H., Tamegai T., Henini M.
 PHYSICAL REVIEW B, vol.56, no.22, pp.14295-14298, 1997 (SCI-Expanded)
- LXIV. **Hall effect in a highly inhomogeneous magnetic field distribution**
 BENDİNG S. J., Oral A.
 JOURNAL OF APPLIED PHYSICS, vol.81, no.8, pp.3721-3725, 1997 (SCI-Expanded)
- LXV. **Microscopic measurement of penetration depth in YBa₂Cu₃O₇-delta thin films by scanning Hall probe microscopy**
 Oral A., BENDİNG S., HUMPHREYS R., HENİNİ M.
 SUPERCONDUCTOR SCIENCE & TECHNOLOGY, vol.10, no.1, pp.17-20, 1997 (SCI-Expanded)
- LXVI. **Vortex imaging in superconducting films by Scanning Hall Probe Microscopy**
 Oral A., BENDİNG S. J., HUMPHREYS R. G., HENİNİ M.
 JOURNAL OF LOW TEMPERATURE PHYSICS, vol.105, pp.1135-1140, 1996 (SCI-Expanded)
- LXVII. **Real-time scanning hall probe microscopy**
 Oral A., BENDİNG S. J., HENİNİ M.
 APPLIED PHYSICS LETTERS, vol.69, no.9, pp.1324-1326, 1996 (SCI-Expanded)
- LXVIII. **Scanning Hall probe microscopy of superconductors and magnetic materials**
 Oral A., Bending S., Henini M.
 JOURNAL OF VACUUM SCIENCE & TECHNOLOGY B, vol.14, no.2, pp.1202-1205, 1996 (SCI-Expanded)
- LXIX. **Initial stages of SiGe epitaxy on Si(001) studied by scanning tunneling microscopy**
 Oral A., Ellialtioglu R.
 Surface Science, vol.323, no.3, pp.295-303, 1995 (SCI-Expanded)
- LXX. **A NOVEL FORCE MICROSCOPE AND POINT-CONTACT PROBE**
 JARVIS S. P., ORAL A., WEİHS T. P., PETHİCA J. B.
 REVIEW OF SCIENTIFIC INSTRUMENTS, vol.64, no.12, pp.3515-3520, 1993 (SCI-Expanded)
- LXXI. **STM OF GLOW-DISCHARGE TREATED SURFACES**
 ORAL A., SERBETCI A., ELLIATIOGLU R., PISKIN E.
 BIOMATERIALS ARTIFICIAL CELLS AND IMMOBILIZATION BIOTECHNOLOGY, vol.21, no.4, pp.469-473, 1993 (SCI-Expanded)

Articles Published in Other Journals

- I. **Direct and real-time observation of sub-micron domain dynamics in magnetically biased strontium ferrite permanent magnets by room temperature scanning micro-Hall probe microscopy**
 Sandhu A., Iida N., Masuda H., ORAL A., Bending S. J.
 Materials Research Society Symposium - Proceedings, vol.674, 2001 (Scopus)
- II. **Nanomechanics using an ultra-small amplitude AFM**
 Hoffmann P. M., Jeffery S., ORAL A., Grimble R. A., Özer H. Ö., Pethica J. B.
 Materials Research Society Symposium-Proceedings, vol.649, 2001 (Scopus)
- III. **A compact and modular scanning tunneling microscope**
 ORAL A., Kaya I., Ellialtioglu R.
 Doga, Turkish Journal of Physics, vol.16, no.6, pp.400-404, 1992 (Scopus)

Refereed Congress / Symposium Publications in Proceedings

- I. **Flexible Organic Light Emitting Diodes (OLEDs) with multi-layer Graphene Anode**
Sharif P., ALEMDAR E., GÜNBAŞ E. G., ÇIRPAN A., ORAL A.
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- II. **Flexible Organic Light Emitting Diodes (OLEDs) with multi-layer Graphene Anode**
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- III. **Multi-layered Conductive Films via Recursive Transfer-Print of Graphene onto Polymeric Foil**
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- IV. **High-density array of 10 nm ferromagnetic nano-islands patterned non-destructively by phase transformation with low-energy proton irradiation**
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- V. **Development of High Speed AFM Operating at 1,000 Lines/s amp 15x15x3µm XYZ Scan Range**
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- VI. **Characterization of Multilayered Conductive Films Produced by Multiple Transfer Printing Graphene onto Ultra-Thin PVC Foil**
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- VIII. **Ups and Downs of Running a Spinoff company for 19 years!**
ORAL A.
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- IX. **Flexible Multilayer Graphene Hall Sensors on Ultra-Thin PVC Foil**
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- X. **Development of SAMPLE Scanning High Speed AFM operating at 1,000 Lines/s 15µm x 15µm x 3µm**
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- XI. **Why Graphene growth on Dielectrics is fascinating**
KARAMAT S., ORAL A.
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- XII. **Status and trends in high performance magnetic imaging using Scanning Probe Microscopy SPM**
ORAL A.
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- XIII. **High performance magnetic imaging using Scanning Probe Microscopy SPM at low temperatures 20mK 300K**
ORAL A.
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- XIV. **Surface and Compositional Study of Graphene grown on Lithium Niobate LiNbO3 substrates by Chemical Vapour Deposition**
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- XVII. **Radiation pressure excitation of Low Temperature Atomic Force Magnetic Force Microscope LT AFM MFM in 4 300K Temperature Range**
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- XIX. **1fm Hz Noise Level Low Temperature Atomic Force Magnetic Force Microscope LT AFM MFM in 20mK 300K Temperature Range**
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Supported Projects

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Metrics

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Non Academic Experience

NanoSis Bilimsel Cihazlar Teknik Danışmanlık Ticaret Ltd.Şti

NanoManyetik Bilimsel Cihazlar Sanayi Ticaret Ltd. Şti.