

## Prof. Dr. AHMET ORAL

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### Eğitim Bilgileri

Doktora, İhsan Doğramacı Bilkent Üniversitesi, Fen Fakültesi, Fizik Bölümü, Türkiye 1990 - 1994

Yüksek Lisans, İhsan Doğramacı Bilkent Üniversitesi, Fen Fakültesi, Fizik Bölümü, Türkiye 1987 - 1990

Lisans, Orta Doğu Teknik Üniversitesi, Mühendislik Fakültesi, Elektrik-Elektronik Mühendisliği Bölümü, Türkiye 1982 - 1987

### Yaptığı Tezler

Doktora, Investigation of Si<sub>1-x</sub>Gex alloy formation by using STM, Bilkent Üniversitesi, Fen Fakültesi, Fizik Bölümü, 1994  
Yüksek Lisans, Construction of a scanning tunneling microscope and first results, Bilkent Üniversitesi, Fen Fakültesi, Fizik Bölümü, 1990

### Akademik Unvanlar / Görevler

Prof. Dr., Orta Doğu Teknik Üniversitesi, Fen Edebiyat Fakültesi, Fizik Bölümü, 2014 - Devam Ediyor

Prof. Dr., Sabancı Üniversitesi, Mühendislik Ve Doğa Bilimleri Fakültesi, Mühendislik Ve Doğa Bilimleri Programları Bölümü, 2008 - 2013

Prof. Dr., İhsan Doğramacı Bilkent Üniversitesi, Fen Fakültesi, Fizik Bölümü, 2006 - 2008

Doç. Dr., İhsan Doğramacı Bilkent Üniversitesi, Fen Fakültesi, Fizik Bölümü, 2002 - 2006

Yrd. Doç. Dr., İhsan Doğramacı Bilkent Üniversitesi, Fen Fakültesi, Fizik Bölümü, 1999 - 2002

Öğretim Görevlisi Dr., University of Oxford, Department Of Materials, 1998 - 1999

Öğretim Görevlisi Dr., University of Oxford, Department Of Materials, 1997 - 1998

Öğretim Görevlisi Dr., University of Bath, Science, School Of Physics, 1994 - 1997

Araştırma Görevlisi, İhsan Doğramacı Bilkent Üniversitesi, Fen Fakültesi, Fizik Bölümü, 1987 - 1994

### Yönetilen Tezler

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

ORAL A., Graphene based flexible hall sensors, Doktora, U.YİĞİT(Öğrenci), 2021

ORAL A., Ultra-yüksek-çözünürlük düşük sıcaklıklı manyetik kuvvet mikroskopisi, Yüksek Lisans, A.Badami(Öğrenci),

2019

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

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

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

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

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

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

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

ORAL A., Mechanically exfoliated single and multilayer graphene sheets and graphene field effect transistor, Yüksek Lisans, S.MANUKYAN(Öğrenci), 2009

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

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

ORAL A., Scanning hall probe microscopy (SHPM) using quartz crystal AFM feedback, Yüksek Lisans, K.ÜRKMEN(Öğrenci), 2005

ORAL A., Fabrication and characterization of GaAs and InAs hall sensors, Yüksek Lisans, S.ÖZDEMİR(Öğrenci), 2004

ORAL A., Fabrication and characterization of bismuth hall sensors at room temperature, Yüksek Lisans, G.BAYER(Öğrenci), 2003

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

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

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

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

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

## SCI, SSCI ve AHCI İndekslerine Giren Dergilerde Yayınlanan Makaleler

- I. **Photovoltaic Response of Liquid Phase Exfoliated Graphene - MoS<sub>2</sub> Heterostructures**  
Javaid A., Karamat S., Khalique U., Naseer H., Sharif P., ORAL A., Akram R.  
Journal of the Physical Society of Japan, cilt.93, sa.8, 2024 (SCI-Expanded)
- II. **Efficient photocatalytic activity of Mo-doped ZnO-In<sub>2</sub>O<sub>3</sub> 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, cilt.21, sa.7, ss.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, cilt.47, sa.6, ss.7779-7788, 2022 (SCI-Expanded)
- IV. **An Effective Route for the Growth of Multilayer MoS<sub>2</sub> 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, cilt.2022, 2022 (SCI-Expanded)

- V. **Synthesis of Graphene-MoS<sub>2</sub> 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, cilt.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, cilt.34, sa.10, ss.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, cilt.10, sa.72, ss.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, cilt.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, cilt.91, sa.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, cilt.442, ss.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, cilt.111, sa.15, 2017 (SCI-Expanded)
- XII. **Growth of nano-graphene on SrTiO<sub>3</sub> (110) substrates by chemical vapour deposition**  
KARAMAT S., Celik K., ORAL A.  
MATERIALS CHEMISTRY AND PHYSICS, cilt.200, ss.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, cilt.88, sa.1, 2017 (SCI-Expanded)
- XIV. **3D scanning Hall probe microscopy with 700 nm resolution**  
DEDE M., AKRAM R., ORAL A.  
APPLIED PHYSICS LETTERS, cilt.109, sa.18, 2016 (SCI-Expanded)
- XV. **Graphene/SrTiO<sub>3</sub> 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, cilt.26, sa.4, ss.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, cilt.368, ss.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, cilt.31, sa.1, ss.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, cilt.25, sa.4, ss.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, cilt.85, sa.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, cilt.85, sa.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, cilt.308, ss.414-418, 2014 (SCI-Expanded)
- XXII. **The effects of postdeposition annealing conditions on structure and created defects in Zn<sub>0.90</sub>Co<sub>0.100</sub> thin films deposited on Si(100) substrate**  
Can M. M., Firat T., Shah S. I., Bakan F., Oral A.  
JOURNAL OF MATERIALS RESEARCH, cilt.28, sa.5, ss.708-715, 2013 (SCI-Expanded)
- XXIII. **Bean-Livingston surface barriers for flux penetration in Bi<sub>2</sub>Sr<sub>2</sub>CaCu<sub>2</sub>O<sub>8</sub>+ $\delta$  single crystals near the transition temperature**  
Mihalache V., Dede M., Oral A., Miu L.  
PHYSICA C-SUPERCONDUCTIVITY AND ITS APPLICATIONS, cilt.471, sa.19-20, ss.563-565, 2011 (SCI-Expanded)
- XXIV. **Vortex phases in magnetic fields near ab-plane in Bi<sub>2</sub>Sr<sub>2</sub>CaCu<sub>2</sub>O<sub>8</sub>+ $\delta$  single crystal**  
Mirkovic J., Saito T., Kashiwagi T., Takeya I., Kubo Y., Yamamoto T., Oral A., Kadowaki K.  
PHYSICA C-SUPERCONDUCTIVITY AND ITS APPLICATIONS, cilt.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, cilt.256, sa.5, ss.1299-1303, 2009 (SCI-Expanded)
- XXVI. **Vortex states in mesoscopic single crystals Bi<sub>2</sub>Sr<sub>2</sub>CaCu<sub>2</sub>O<sub>8</sub>+ $\delta$  in high magnetic fields**  
Mirkovic J., Kubo Y., Saitou T., Takeya I., Yamamoto T., Oral A., Kadowaki K.  
PHYSICA C-SUPERCONDUCTIVITY AND ITS APPLICATIONS, cilt.469, sa.15-20, ss.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, cilt.105, sa.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, cilt.27, sa.2, ss.1001-1005, 2009 (SCI-Expanded)
- XXIX. **Imaging capability of pseudomorphic high electron mobility transistors, AlGa<sub>N</sub>/Ga<sub>N</sub>, 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, cilt.27, sa.2, ss.1006-1010, 2009 (SCI-Expanded)
- XXX. **Variable Temperature-Scanning Hall Probe Microscopy With Ga<sub>N</sub>/AlGa<sub>N</sub> 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, cilt.44, sa.11, ss.3255-3260, 2008 (SCI-Expanded)
- XXXI. **Vortex imaging with varying temperature revealed by SHPM on Bi(2)Sr(2)CaCu(2)O<sub>8</sub>+ $\gamma$**   
Mihalache V., Dede M., Oral A., Sandu V.  
PHYSICA C-SUPERCONDUCTIVITY AND ITS APPLICATIONS, cilt.468, sa.7-10, ss.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, cilt.8, sa.2, ss.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, cilt.22, sa.15, ss.6485-6488, 2006 (SCI-Expanded)
- XXXIV. **Real-time imaging of vortex-antivortex annihilation in Bi<sub>2</sub>Sr<sub>2</sub>CaCu<sub>2</sub>O<sub>8</sub>+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, cilt.45, sa.3B, ss.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, cilt.76, sa.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, cilt.70, sa.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, ss.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, cilt.15, sa.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, cilt.43, sa.2, ss.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, cilt.39, sa.5, ss.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, cilt.74, sa.8, ss.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, cilt.82, sa.20, ss.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, cilt.210, ss.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, cilt.13, sa.1, ss.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, cilt.124, sa.12, ss.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, cilt.41, sa.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, cilt.38, sa.5, ss.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, cilt.91, ss.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, cilt.242, ss.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, cilt.188, ss.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, cilt.87, sa.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, cilt.37, sa.22, ss.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, cilt.79, sa.12, ss.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, cilt.40, ss.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, cilt.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, cilt.457, sa.2009, ss.1161-1174, 2001 (SCI-Expanded)
- LVII. **Collective modes in flux line liquids**  
Tanatar B., Oral A.  
SUPERCONDUCTOR SCIENCE & TECHNOLOGY, cilt.13, sa.7, ss.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, cilt.404, sa.6779, ss.743-745, 2000 (SCI-Expanded)
- LIX. **Quantitative electrostatic force measurement in AFM**  
JEFFERY S., Oral A., Pethica J. B.  
Applied Surface Science, cilt.157, sa.4, ss.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, cilt.426, sa.2, ss.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, cilt.196, ss.917-919, 1999 (SCI-Expanded)
- LXII. **Direct observation of melting of the vortex solid in Bi<sub>2</sub>Sr<sub>2</sub>CaCu<sub>2</sub>O<sub>8</sub>+delta single crystals**  
Oral A., BARNARD J. C., BENDİNG S. J., KAYA I. I., OOI S., TAMEGAI T., HENİNİ M.  
PHYSICAL REVIEW LETTERS, cilt.80, sa.16, ss.3610-3613, 1998 (SCI-Expanded)
- LXIII. **Disorder-driven intermediate state in the lattice melting transition of Bi<sub>2</sub>Sr<sub>2</sub>CaCu<sub>2</sub>O<sub>8</sub>+delta single crystals**  
Oral A., Barnard J., Ooi S., Taoka H., Tamegai T., Henini M.  
PHYSICAL REVIEW B, cilt.56, sa.22, ss.14295-14298, 1997 (SCI-Expanded)
- LXIV. **Hall effect in a highly inhomogeneous magnetic field distribution**  
BENDİNG S. J., Oral A.  
JOURNAL OF APPLIED PHYSICS, cilt.81, sa.8, ss.3721-3725, 1997 (SCI-Expanded)
- LXV. **Microscopic measurement of penetration depth in YBa<sub>2</sub>Cu<sub>3</sub>O<sub>7</sub>-delta thin films by scanning Hall probe microscopy**  
Oral A., BENDİNG S., HUMPHREYS R., HENİNİ M.  
SUPERCONDUCTOR SCIENCE & TECHNOLOGY, cilt.10, sa.1, ss.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, cilt.105, ss.1135-1140, 1996 (SCI-Expanded)
- LXVII. **Real-time scanning hall probe microscopy**  
Oral A., BENDİNG S. J., HENİNİ M.  
APPLIED PHYSICS LETTERS, cilt.69, sa.9, ss.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, cilt.14, sa.2, ss.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, cilt.323, sa.3, ss.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, cilt.64, sa.12, ss.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, cilt.21, sa.4, ss.469-473, 1993 (SCI-Expanded)

## **Diğer Dergilerde Yayınlanan Makaleler**

- 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, cilt.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, cilt.649, 2001 (Scopus)
- III. **A compact and modular scanning tunneling microscope**  
ORAL A., Kaya I., Ellialtioglu R.  
Doga, Turkish Journal of Physics, cilt.16, sa.6, ss.400-404, 1992 (Scopus)

## Hakemli Kongre / Sempozyum Bildiri Kitaplarında Yer Alan Yayınlar

- I. **Flexible Organic Light Emitting Diodes (OLEDs) with multi-layer Graphene Anode**  
Sharif P., ALEMDAR E., GÜNBAŞ E. G., ÇIRPAN A., ORAL A.  
Graphene2020 Virtual International Conference Expo, 19 - 23 Ekim 2020
- II. **Flexible Organic Light Emitting Diodes (OLEDs) with multi-layer Graphene Anode**  
Sharif P., ALEMDAR E., GÜNBAŞ E. G., ÇIRPAN A., ORAL A.  
Graphene2020 Virtual International Conference Expo, 19 - 23 Ekim 2020
- III. **Multi-layered Conductive Films via Recursive Transfer-Print of Graphene onto Polymeric Foil**  
Inkaya U., ÇELİK K., ORAL A.  
Graphene Conference 2018, Dresden, Almanya, 26 - 29 Haziran 2018
- IV. **High-density array of 10 nm ferromagnetic nano-islands patterned non-destructively by phase transformation with low-energy proton irradiation**  
DUTTA T., PATHAK S., ASBAHİ M., ÇELİK K., LEE J. M., YANG P., SAİFULLAH M. S. M., ORAL A., BHATIA C., CHA J., et al.  
The 4th International Symposium on Advanced Magnetic Materials and Applications (ISAMMA 2017) 10-13 December 2017 – Phu Quoc, Vietnam, 10 - 13 Aralık 2017
- V. **Development of High Speed AFM Operating at 1,000 Lines/s amp 15x15x3µm XYZ Scan Range**  
ÇELİK Ü., KEHRİBAR İ., UYSALLI Y., ÇELİK K., ÖZER H. Ö., ORAL A.  
2017 MRS Fall Meeting, Boston, Amerika Birleşik Devletleri, 26 Kasım - 01 Aralık 2017
- VI. **Characterization of Multilayered Conductive Films Produced by Multiple Transfer Printing Graphene onto Ultra-Thin PVC Foil**  
Inkaya U., ÇELİK K., ORAL A.  
MRS 2017 Fall Meeting, Boston, Amerika Birleşik Devletleri, 30 Kasım 2017
- VII. **Development of High Speed AFM operating at 1,000 Lines/s 15x15x3µm XYZ Scan Area**  
ÇELİK U., KEHRİBAR İ., ÇELİK K., ÖZER H. Ö., ORAL A.  
ISSS-8 The 8Th International Symposium on Surface Science, 22 - 26 Ekim 2017
- VIII. **Ups and Downs of Running a Spinoff company for 19 years!**  
ORAL A.  
Bridging Science and Business working group of the Marie Curie Alumni Association (MCAA), 11 - 12 Eylül 2017
- IX. **Flexible Multilayer Graphene Hall Sensors on Ultra-Thin PVC Foil**  
ORAL A.  
Graphene Malaysia 2017, 10 - 11 Temmuz 2017
- X. **Development of SAMPLE Scanning High Speed AFM operating at 1,000 Lines/s 15µm x 15µm x 3µm**  
ÇELİK Ü., UYSALLI Y., KEHRİBAR İ., ÇELİK K., ÖZER H. Ö., ORAL A.  
The 19th International Scanning Probe Microscopy Conference KYOTO JAPAN, 17 - 19 Mayıs 2017
- XI. **Why Graphene growth on Dielectrics is fascinating**  
KARAMAT S., ORAL A.  
SurfCoat Korea 2017 International Conference, 29-31 March (2017), 29 - 31 Mart 2017
- XII. **Status and trends in high performance magnetic imaging using Scanning Probe Microscopy SPM**  
ORAL A.  
THE 1st UKM-ISESCO-COMSATS INTERNATIONAL WORKSHOP ON NANOTECHNOLOGY FOR YOUNG SCIENTISTS (IWYS 2016), 28 - 30 Kasım 2016
- XIII. **High performance magnetic imaging using Scanning Probe Microscopy SPM at low temperatures 20mK 300K**  
ORAL A.  
11th International Conference on New Theories, Discoveries, Applications of Superconductors and Related Materials, 11 - 16 Eylül 2016
- XIV. **Surface and Compositional Study of Graphene grown on Lithium Niobate LiNbO3 substrates by Chemical Vapour Deposition**  
KARAMAT S., ÇELİK U., ORAL A.  
American Physical Society, APS, March Meeting 2016 Baltimore, ABD, 14 - 18 Mart 2016



- XV. **Development of tip Scanning High Speed AFM operating at 1 000 Lines s 15um**  
ÇELİK U., KEHRİBAR I., ORAL A.  
American Physical Society, APS, March Meeting 2016 Baltimore, ABD, 14 - 18 Mart 2016
- XVI. **Structural and Compositional Study of Graphene grown on SrTiO3 by Chemical Vapour Deposition**  
KARAMAT S., ÇELİK U., ORAL A.  
American Physical Society, APS, March Meeting 2016 Baltimore, ABD, 14 - 18 Mart 2016
- XVII. **Radiation pressure excitation of Low Temperature Atomic Force Magnetic Force Microscope LT AFM MFM in 4 300K Temperature Range**  
KARCI Ö., ÇELİK Ü., UYSALLI Y., ÖZER H. Ö., ORAL A.  
16th European Conference on Applications of Surface and Interface Analysis, ECASIA'15, Granada, İspanya, 28 Eylül - 01 Ekim 2015
- XVIII. **Non contact Atomic Force Microscope nAFM Operation in UHV Using Radiation Pressure Excitation of Cantilever**  
UYSALLI Y., ÇELİK Ü., KARCI Ö., ÖZER H. Ö., ORAL A.  
The NC-AFM 2015, 18th International Conference on non-contact Atomic Force Microscopy (NC-AFM), Cassis, Fransa, 7-11 Eylül 2015, CASSIS, Fransa, 7 - 11 Eylül 2015
- XIX. **1fm Hz Noise Level Low Temperature Atomic Force Magnetic Force Microscope LT AFM MFM in 20mK 300K Temperature Range**  
KARCI Ö., ÇELİK Ü., DEDE M., ORAL A.  
The 11th International Conference on Materials & Mechanisms of Superconductivity (M2S)CICG, Geneva, Switzerland, 23 - 28 August 2015, CENEVRE, İsviçre, 23 - 28 Ağustos 2015
- XX. **Radiation pressure excitation of low temperature atomic force magnetic force microscope LT AFM MFM for imaging**  
KARCI Ö., ÇELİK Ü., UYSALLI Y., ÖZER H. Ö., ORAL A.  
The 11th International Conference on Materials & Mechanisms of Superconductivity (M2S)CICG, Geneva, Switzerland, 23 - 28 August 2015, CENEVRE, İsviçre, 23 - 28 Ağustos 2015
- XXI. **Piezoelectric Properties of Layer by Layer Films**  
OZLEM S., UMİT C., EREL GÖKTEPE İ., BAYRAM G., ORAL A.  
11th Nanoscience and Nanotechnology Conference (NanoTR-11), Türkiye, 22 - 25 Haziran 2015
- XXII. **1fm Hz Noise Level Fiber Fabry Perot Interferometers Radiation pressure excitation of Low Temperature Atomic Force Magnetic Force Microscope LT AFM MFM in 20mK 300K Temperature Range**  
ORAL A.  
9th International Conference on Magnetic and Superconducting Materials (MSM15), 30 Nisan - 03 Mayıs 2015
- XXIII. **Peeling of Chemical Vapour Deposition Graphene Grown on Platinum and Copper foils using Alkaline Solutions for Reuseable Substrates**  
KARAMAT S., SONUSEN S., ÇELİK Ü., UYSALLI Y., ORAL A.  
MRS Spring Meeting, 6-10 Nisan 2015, San Francisco, ABD, 6 - 10 Nisan 2015
- XXIV. **Growth of Few Layer Single Crystal and Coalesced Graphene Grains on Platinum by Chemical Vapour Deposition**  
KARAMAT s., SELDA S., UMİT Ç., UYSALLI Y., ÖZGÖNÜL E., ORAL A.  
ImagineNano 2015 Conference ,10-13 Mart 2015, Bilbao, İspanya, 10 - 13 Mart 2015
- XXV. **Chemical Vapour Deposition of Graphene with Re useable Pt and Cu substrates for Flexible Electronics**  
KARAMAT S., SONUSEN S., ÇELİK Ü., UYSALLI Y., ORAL A.  
American Physical Society, APS, March Meeting 2015 2-6, Mart 2015; San Antonio, Texas, 2 - 06 Mart 2015
- XXVI. **An ultra low temperature scanning Hall probe microscope SHPM for magnetic imaging below 40 mK**  
KARCI Ö., PIATEK J., JORBA P., DEDE M., RONNOW H., ORAL A.  
American Physical Society, APS, March Meeting 2015 2-6, Mart 2015; San Antonio, Texas, San-Antonio, Kuzey Mariana Adaları, 2 - 06 Mart 2015
- XXVII. **Structural and electrical characterization of electro spray deposited PZT sol-PZT nanopowder**

**composite thick films**

Gurbuz M., Celik U., Sakurai H., Kuromitsu Y., ORAL A., Dogan A.

2014 Joint IEEE International Symposium on the Applications of Ferroelectric, International Workshop on Acoustic Transduction Materials and Devices and Workshop on Piezoresponse Force Microscopy, ISAF/IWATMD/PFM 2014, Pennsylvania, Amerika Birleşik Devletleri, 12 - 16 Mayıs 2014

XXVIII. **Variable temperature Scanning Hall Probe Microscopy (SHPM) using quartz crystal AFM feedback**

Dede M., Urkmen K., ORAL A., Farrer I., Ritchie D.

INTERMAG 2006 - IEEE International Magnetics Conference, San Diego, CA, Amerika Birleşik Devletleri, 8 - 12 Mayıs 2006, ss.584

XXIX. **Scanning Hall Probe Microscopy (SHPM) using quartz crystal AFM feedback**

Dede M., Ürkmen K., ORAL A.

INTERMAG ASIA 2005: Digests of the IEEE International Magnetics Conference, Nagoya, Japonya, 4 - 08 Nisan 2005, ss.100

XXX. **Linear measurements of nanomechanical phenomena using small-amplitude AFM**

Hoffmann P. M., Patil S., Matei G., Tanulku A., Grimble R., Özer H. Ö., Jeffery S., ORAL A., Pethica J.

2004 MRS Fall Meeting, Boston, MA, Amerika Birleşik Devletleri, 29 Kasım - 03 Aralık 2004, cilt.838, ss.7-12

XXXI. **Room temperature scanning micro-hall probe microscopy under extremely large pulsed magnetic fields**

Sandhu A., Masuda H., ORAL A.

Intermag 2003: International Magnetics Conference, Boston, MA, Amerika Birleşik Devletleri, 28 Mart - 03 Nisan 2003

XXXII. **Room temperature scanning micro-Hall probe microscopy under extremely large pulsed magnetic fields**

Sandhu A., Masuda H., ORAL A.

2003 IEEE International Magnetics Conference, Intermag 2003, Massachusetts, Amerika Birleşik Devletleri, 30 Mart - 03 Nisan 2003

XXXIII. **RT-SHPM imaging of permalloy microstructures and garnet films using new high performance INSB sensors**

ORAL A., Kaval M., Dede M., Sandhu A.

2002 IEEE International Magnetics Conference-2002 IEEE INTERMAG, Amsterdam, Hollanda, 28 Nisan - 02 Mayıs 2002

XXXIV. **RT-SHPM imaging of permalloy microstructures and garnet films using new high performance InSb sensors**

ORAL A., Kaval M., Dede M., Sandhu A.

2002 IEEE International Magnetics Conference, INTERMAG Europe 2002, Amsterdam, Hollanda, 28 Nisan - 02 Mayıs 2002

XXXV. **Magnetic imaging of ferromagnetic domains by room temperature scanning hall probe microscopy using GaAs/AlGaAs and bismuth micro-hall probes**

Sandhu A., Masuda H., ORAL A., Bending S., Inushima T.

Physics of Semiconductor Devices, Delhi, Hindistan, 11 - 15 Aralık 2001, cilt.4746 II, ss.950-955

XXXVI. **Nanomechanics using an ultra-small amplitude AFM**

Hoffmann P., Jeffery S., ORAL A., Grimble R., Özer H. Ö., Pethica J.

Fundamentals of Nanoindentation and Nanotribology II, Boston, MA, Amerika Birleşik Devletleri, 28 - 30 Kasım 2000, cilt.649

XXXVII. **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.

Applications of Ferromagnetic and Optical Materials, Storage and Magnotoelectronics, San Francisco, CA, Amerika Birleşik Devletleri, 16 - 20 Nisan 2001, cilt.674

XXXVIII. **Room temperature magnetic imaging of magnetic storage media and garnet epilayers in the presence of external magnetic fields using a sub-micron GaAs SHPM**

SANDHU A., MASUDA H., Oral A., Bending S.

11th International Conference on Molecular Beam Epitaxy, Beijing, Çin, 11 - 15 Eylül 2000, ss.899-905

XXXIX. **MECHANICS OF CONTACTS AT LESS-THAN 100-Å SCALE - INDENTATION AND AFM**

JARVIS S., WEIHS T., ORAL A., PETHICA J.

Symposium on Thin Films: Stresses and Mechanical Properties IV, at the 1993 Spring Meeting of the Materials-Research-Society, San-Francisco, Kostarika, 12 - 16 Nisan 1993, cilt.308, ss.127-132

## **Desteklenen Projeler**

ORAL A., Yükseköğretim Kurumları Destekli Proje, FİBER GİRİŞİM ÖLÇERİN TİTANYUM DİOKSİT İLE KAPLANARAK GELİŞTİRİLMESİ, 2017 - 2017

ORAL A., Yükseköğretim Kurumları Destekli Proje, ESNEK VE İNCE HALL SENSÖRLERİN GELİŞTİRİLMESİ, 2017 - 2017

ORAL A., Yükseköğretim Kurumları Destekli Proje, SPIN ON DOPANT VE SPIN ON GLASS KULLANILARAK TEK KRİSTAL SİLİSYUM NMOS TİPİ TRANSİSTÖR ÜRETİMİ, 2017 - 2017

ORAL A., Yükseköğretim Kurumları Destekli Proje, Ultra Düşük Gürültülü Fiber Fabry-Perot İnterferometresi Geliştirilmesi, 2015 - 2015

## **Metrikler**

Yayın: 114

Atf (WoS): 1787

Atf (Scopus): 1454

H-İndeks (WoS): 24

H-İndeks (Scopus): 22

## **Akademi Dışı Deneyim**

NanoSis Bilimsel Cihazlar Teknik Danışmanlık Ticaret Ltd.Şti

NanoManyetik Bilimsel Cihazlar Sanayi Ticaret Ltd. Şti.