Asst. Prof. Kayhan Develi

Personal Information

Office Phone: +90 212 285 6082
Email: kayhan@itu.edu.tr
Web: http://akademi.itu.edu.tr/kayhan/
Address: İTÜ Maden Fak. Jeoloji Müh. Böl. Ofis: A106 Maslak İstanbul

International Researcher IDs
ORCID: 0000-0001-7489-3161
ScopusID: 6508241951
Yoksis Researcher ID: 232618

Research Areas

Applied Geology, Mathematical Geology, Hydromechanics, Fracture Mechanics, Mechanical Testing, Rock Mechanics, Petroleum And Natural Gas Engineering, Reservoir, Reservoir Engineering and Recovery Methods

Academic Titles / Tasks

Assistant Professor, Istanbul Technical University, Maden, Jeoloji Mühendisliği, 2018 - Continues
Assistant Professor, Istanbul Technical University, Maden, Jeoloji Mühendisliği, 2015 - 2018

Academic and Administrative Experience

İstanbul Teknik Üniversitesi, Maden Fakültesi, 2015 - Continues

Courses

Earth Science for Civil Engineers, Undergraduate, 2022 - 2023, 2021 - 2022
EngineeringGeology, Undergraduate, 2022 - 2023, 2021 - 2022
Experimental Rock Mechanics, Undergraduate, 2022 - 2023, 2021 - 2022
Engineering Geology, Undergraduate, 2021 - 2022
Geology for Engineers, Undergraduate, 2020 - 2021
Earth Science for Civil Engineers, Undergraduate, 2021 - 2022
Applied Rock Mechanics, Undergraduate, 2019 - 2020
Experimental Rock Mechanics, Undergraduate, 2020 - 2021
Earth Science for Civil Engineers, Undergraduate, 2019 - 2020
Experimental Rock Mechanics, Undergraduate, 2019 - 2020
Characterization of Discontinuous Medium – Hydraulic & Mechanical Properties, Undergraduate, 2019 - 2020
Engineering Geology, Undergraduate, 2018 - 2019
Kaya Mekaniği, Undergraduate, 2016 - 2017, 2015 - 2016
Geology for Civil Engineers, Undergraduate, 2016 - 2017
Rock Mechanics, Undergraduate, 2016 - 2017
İnşaat Jeolojisi, Undergraduate, 2016 - 2017, 2015 - 2016

Published journal articles indexed by SCI, SSCI, and AHCI

I. **Quantifying the Rock Damage Intensity Controlled by Mineral Compositions: Insights from Fractal Analyses**
Dinç Göğüş Ş. Ö., Avşar E., Develi K., Çalık A.
FRACTAL AND FRACTIONAL, vol.7, no.383, pp.1-18, 2023 (SCI-Expanded)

II. **Computation of direction dependent joint surface parameters through the algorithm of triangular prism surface area method: A theoretical and experimental study**
Develi K.
INTERNATIONAL JOURNAL OF SOLIDS AND STRUCTURES, vol.202, pp.895-911, 2020 (SCI-Expanded)

III. **A visual experimental study on proppants transport in rough vertical fractures**
Huang H., Babadagli T., Li H., Develi K., Zhou D.
INTERNATIONAL JOURNAL OF ROCK MECHANICS AND MINING SCIENCES, vol.134, 2020 (SCI-Expanded)

IV. **Effect of injection parameters on proppant transport in rough vertical fractures: An experimental analysis on visual models**
Huang H., Babadagli T., Li H. A., Develi K., Wei G.
JOURNAL OF PETROLEUM SCIENCE AND ENGINEERING, vol.180, pp.380-395, 2019 (SCI-Expanded)

V. **Percolation characteristics of solvent invasion in rough fractures under miscible conditions**
Korfanta M., Babadagli T., Develi K.
JOURNAL OF CONTAMINANT HYDROLOGY, vol.205, pp.25-36, 2017 (SCI-Expanded)

VI. **Effect of Fracture Roughness, Shear Displacement, Fluid Type, and Proppant on the Conductivity of a Single Fracture: A Visual and Quantitative Analysis**
Raimbay A., Babadagli T., Kuru E., Develi K.
SPE RESERVOIR EVALUATION & ENGINEERING, vol.20, no.2, pp.446-470, 2017 (SCI-Expanded)

VII. **Fractal analysis of single-phase water and polymer solution flow at high rates in open and horizontally displaced rough fractures**
Raimbay A., Babadagli T., Kuru E., Develi K.
INTERNATIONAL JOURNAL OF ROCK MECHANICS AND MINING SCIENCES, vol.92, pp.54-71, 2017 (SCI-Expanded)

VIII. **Quantitative and visual analysis of proppant transport in rough fractures**
Raimbay A., Babadagli T., Kuru E., Develi K.
JOURNAL OF NATURAL GAS SCIENCE AND ENGINEERING, vol.33, pp.1291-1307, 2016 (SCI-Expanded)

IX. **Effect of surface roughness and lithology on the water-gas and water-oil relative permeability ratios of oil-wet single fractures**
Babadagli T., Raza S., REN X., Develi K.
INTERNATIONAL JOURNAL OF MULTIPHASE FLOW, vol.75, pp.68-81, 2015 (SCI-Expanded)

X. **FRACTAL ASPECTS OF MISCIBLE DISPLACEMENT IN ROUGH FRACTURES: AN EXPERIMENTAL APPROACH**
Korfanta M., Babadagli T., Develi K.
FRACTALS-COMPLEX GEOMETRY PATTERNS AND SCALING IN NATURE AND SOCIETY, vol.23, no.1, 2015 (SCI-Expanded)

XI. **Experimental and visual analysis of single-phase flow through rough fracture replicas**
Develi K., Babadagli T.
International Journal of Rock Mechanics and Mining Sciences, vol.73, pp.139-155, 2015 (SCI-Expanded)

XII. **Effects of fractal surface roughness and lithology on single and multiphase flow in a single fracture: An experimental investigation**
Babadagli T., Ren X., Develi K.
INTERNATIONAL JOURNAL OF MULTIPHASE FLOW, vol.68, pp.40-58, 2015 (SCI-Expanded)

XIII. **Fractal characteristics of rocks fractured under tension**
Babadagli T., Develi K.
Theoretical and Applied Fracture Mechanics, vol.39, no.1, pp.73-88, 2003 (SCI-Expanded)

XIV. **A new computer-controlled surface-scanning device for measurement of fracture surface roughness**

Develi K., Babadagli T., Comlekci C.
Computers and Geosciences, vol.27, no.3, pp.265-277, 2001 (SCI-Expanded)

XV. **On the application of methods used to calculate the fractal dimension of fracture surfaces**
Babadagli T., Develi K.
Fractals, vol.9, no.1, pp.105-128, 2001 (SCI-Expanded)

XVI. **Quantification of natural fracture surfaces using fractal geometry**
Develi K., Babadağlı T.
MATHEMATICAL GEOLOGY, vol.30, no.8, 1998 (SCI-Expanded)

Articles Published in Other Journals

I. **Numerical Analysis of Rock Deformation Evolution Regarding Microcracking Process**
dinç göğüş ö., Avşar E., Develi K., Calik A.
Yerbilimleri, vol.44, no.2, pp.123-141, 2023 (Scopus)

II. **Yüzey pürüzlülüğünün sayısal tanımı ve süreksizliğin kesme dayanımına etkisi**
DEVELİ K., VARDAR M.
İTÜ Dergisi, Seri D; Mühendislik, vol.5, 2006 (Peer-Reviewed Journal)

Refereed Congress / Symposium Publications in Proceedings

I. **Characterization of Natural Discontinuities in Tight Sandstone and Gas Shale Unconventional Reservoir Rocks of Thrace Region in Turkey with DFN Method - ARMA 22–295**
Celen F., Develi K.
56th US Rock Mechanics/Geomechanics Symposium (ARMA, American Rock Mechanics Association), New Mexico, United States Of America, 26 - 29 June 2022, pp.1-4

II. **Modelling of Hydraulic Fracturing Treatments in South East Part of Turkey with DFN Method and Comparison with Simulation Results - ARMA-2021-1213**
Sipahi M. T., Develi K.
55th US Rock Mechanics/Geomechanics Symposium. (ARMA, American Rock Mechanics Association), Texas, United States Of America, 20 - 23 June 2021, pp.1-7

III. **Experimental study on the effect of injection parameters on proppant transport in rough vertical hydraulic fractures SPE-190041-MS**
HUANG H., Babadağlı t., Lİ H. A., DEVELİ K., WEİ G.
SPE Western Regional Meeting, Garden Grove California, United States Of America, 22 - 27 April 2018, pp.1-17

IV. **Visual analysis on the efeects of fracture-surface characteristics and rock type on proppant transport in vertical fractures SPE-189892-MS**
HUANG H., Babadağlı t., Lİ H. A., DEVELİ K.
SPE Hydraulic Fracturing Technology Conference Exhibition, The Woodlands Texas, United States Of America, 23 - 25 January 2018, pp.1-14

V. **Visual analysis on the effects of fracture-surface characteristics and rock type on proppant transport in vertical fractures**
Huang H., Babadagli T., Andy Li H., Develi K.
SPE Hydraulic Fracturing Technology Conference and Exhibition 2018, HFTC 2018, Texas, United States Of America, 23 - 25 January 2018

VI. **Experimental Study on the Effect of Injection Parameters on Proppant Transport in Rough Vertical Hydraulic Fractures**
Huang H., Babadagli T., Li H., Develi K., Wei G.
SPE Western Regional Meeting 2018, California, United States Of America, 22 - 26 April 2018

VII. **Quantitative and Visual Analysis of Proppant Transport in Rough Fracture and Aperture Stabilty SPE**

173385 MS

RAIMBAY A., Babadağlı T., KURU E., DEVELİ K.

2015 SPE Hydraulic Fracturing Technology Conference, The Woodlands, Texas, 3 - 05 February 2015

VIII. **Quantitative and visual analysis of proppant transport in rough fractures and aperture stability**

Raimbay A., Babadagli T., Kuru E., Develi K.

SPE Hydraulic Fracturing Technology Conference 2015, Texas, United States Of America, 3 - 05 February 2015, pp.874-884

IX. **Effect of fracture surface roughness and shear displacement on permeability and proppant transportation in a single fracture SPE 171577 MS**

RAIMBAY A., Babadağlı T., KURU E., DEVELİ K.

SPE/CSUR Unconventional Resources Conference – Canada, CALGARY, ALBERTA, 30 September - 02 October 2014, pp.1-18

X. **Effect of fracture roughness and shear displacement on permeability and proppant transportation in a single fracture**

Raimbay A., Babadagli T., Kuru E., Develi K.

SPE Canadian Unconventional Resources Conference 2014, Calgary, Canada, 30 September - 02 October 2014, vol.1, pp.89-106

XI. **Fractal fracture surfaces and fluid displacement process in fractured rocks**

Babadağlı T., DEVELİ K.

ICF100570OR, 10th Int. Conf. of Fracture, Honolulu, Oahu, Hawaii, Honolulu, Oahu,, 03 December 2001

XII. **Fractal fracture surfaces and its effect on fluid displacement efficiency**

Babadağlı T., DEVELİ K.

31st Int. Geological Cong. Rio de Janeiro, Brazil, Rio-De-Janeiro, Brazil, 6 - 17 August 2000

XIII. **Fractal Analysis of Natural and Synthetic Fracture Surfaces of Geothermal Reservoir Rocks**

Babadağlı T., DEVELİ K.

2000 World Geothermal Congress, Kyushu-Tohoku, Japan, Kyushu-Tohoku, 28 May - 10 June 2000

XIV. **Analysis of Fracture Development and Propagation Using Fractal Methods**

Babadağlı T., DEVELİ K.

12th Petroleum Cong. And Exh. of Turkey, Ankara, Turkey, Ankara, Turkey, 12 - 15 October 1998

XV. **Fracture Surface Characterization by Fractal Methods and Effect of Fractal Dimension on Fluid Transport Efficiency**

Babadağlı T., DEVELİ K.

12th Petroleum Cong. and Exh. of Turkey, Ankara, Turkey, Ankara, Turkey, 12 - 15 October 1998

Supported Projects

Develi K., BABADAĞLI T., Sipahi M. T., Project Supported by Higher Education Institutions, Trakya Bölgesi Sıkı Kumtaşı ve Gaz Şeyli Geleneksel Olmayan Ankonvansiyonel Rezervuarları Örneğinde Pürüzlü Saydam Yapay ve Doğal Çatlak Replikaları Boyunca Proppant Taşınım ve Yerleşiminin Laboratuvar Modellemesi, 2020 - Continues

Dinç Göğüş Ş. Ö., Develi K., Çalık A., Avşar E., TUBITAK Project, Investigation of Crack Growth Evolution in Rocks Through Discrete Element Method, Mineralogical - Scanning Electron Microscope and Fractal Geometry Analyses, 2021 - 2023

Develi K., Sipahi M. T., Project Supported by Higher Education Institutions, ANALYSIS OF HYDRAULIC FRACTURE DEVELOPMENT USING FracMan IN THE EXAMPLE OF TIGHT SANDSTONE UNCONVENTIONAL RESERVOIR ROCK OF SOUTHEASTERN ANATOLIA REGION, 2020 - 2022

Develi K., Project Supported by Higher Education Institutions, Quantitative and Visual Analysis of Proppant Transport in Rough Fractures and Aperture Stability, 2015 - 2018

Vardar M., Develi K., Çömlekçi C., TUBITAK Project, Çatlaklı Ortamların Mekanik ve Hidrolik Modellemesi için Pürüzlülüğün Deneysel ve Teorik Yöntemlerle Sayısal Tanımı, 1998 - 2001

Scientific Refereeing

ROCK MECHANICS AND ROCK ENGINEERING, SCI Journal, June 2023
Energy, SCI Journal, January 2023
ROCK MECHANICS AND ROCK ENGINEERING, SCI Journal, November 2022
BULLETIN OF ENGINEERING GEOLOGY AND THE ENVIRONMENT, SCI Journal, February 2019
YERBİLİMLERİ/HACETTEPE ÜNİVERSİTESİ YERBİLİMLERİ UYGULAMA VE ARAŞTIRMA MERKEZİ DERGİSİ, National Scientific Refreed Journal, October 2017
INTERNATIONAL JOURNAL OF ROCK MECHANICS AND MINING SCIENCES, SCI Journal, July 2015
YERBİLİMLERİ/HACETTEPE ÜNİVERSİTESİ YERBİLİMLERİ UYGULAMA VE ARAŞTIRMA MERKEZİ DERGİSİ, National Scientific Refreed Journal, June 2010
ENGINEERING GEOLOGY, SCI Journal, April 2002

Mobility Activity

Post Doc, Post Doc, University of Alberta, Canada, 2008 - 2008

Metrics

Publication: 37
Citation (WoS): 272
Citation (Scopus): 339
H-Index (WoS): 7
H-Index (Scopus): 9

Non Academic Experience

İstanbul Teknik Üniversitesi Maden Fakültesi Petrol ve Doğal Gaz Mühendisliği Bölümü
İstanbul Teknik Üniversitesi Maden Fakültesi Jeoloji Mühendisliği Bölümü
İstanbul Büyükşehir Belediyesi İSKİ Genel Müdürlüğü
BAŞBAKANLIK Köy Hizmetleri İstanbul İl Müdürlüğü
BAŞBAKANLIK Köy Hizmetleri Gaziantep İl Müdürlüğü