

Dr.Smail Benbarek

Associate Professor
Department of Mechanical Engineering

Address: BP 89, Cité Ben M'hidi, Sidi
Bel Abbas, 22000, Algeria

Mobile : +213.554.388.759

Email : sma_benbarek@yahoo.fr



Academic Degrees

- | | |
|-------------|--|
| 2000 | BSc- in Mechanical Engineering/ Mechanical Construction
Mechanical Departement , Djillali Lyabes University, Algeria
Notch Effet on the Stress Concentration Factor |
| 2004 | MSc- in Mechanical Engineering /Materials Sciences (BioMechanis)
Mechanical Departement , Djillali Lyabes University, Algeria
Finite element analysis of the mechanical behavior of total hip prosthesis |
| 2008 | PhD- in Mechanical Engineering /Materials Sciences (BioMechanics)
Mechanical Departement , Djillali Lyabes University, Algeria
Defect and Micro-Defects Effect on the Fracture Behavior of Total Hip Prosthesis Cement. |

Papers

- | | |
|-------------|---|
| 2007 | <ul style="list-style-type: none">FE analysis of the behaviour of microcracks in the cement mantle of reconstructed acetabulum in the total hip prosthesis. B. Bachir Bouiadjra, A. Belarbi, S. Benbarek, T. Achour, B. Serier. <i>Volume 457, Issues 1-2, 25 May 2007.</i>Finite element analysis of the behaviour of crack emanating from microvoid in cement of reconstructed acetabulum. S. Benbarek, Bachir Bouiadjra, T. Achour, M. Belhouari, B. Serier. <i>Materials Science and Engineering: A Volume 40, Issue 4, October 2007, Pages 485-491.</i> |
| 2009 | <ul style="list-style-type: none">Analysis of the effect of the forces during gait on the fracture behaviour in cement of reconstructed acetabulum. B. Serier, B. Bachir Bouiadjra, S. Benbarek, T. Achour. <i>Computational Materials Science . Volume 46, Issue 2, August 2009, Pages 267-274.</i>Analysis of fracture behaviour of the cement mantle of reconstructed acetabulum. S. Benbarek, B. Bachir Bouiadjra, A. Mankour, T. Acour, B. Serie. <i>Computational Materials Science. Volume 44, Issue 4, February 2009, Pages 1291-1295.</i> |

2010

- Analysis of the effect of load direction on the stress distribution in dental implant. N. Djebbar, B. Serier, B. Bachir Bouiadjra, S. Benbarek, A. Draï. *Materials & Design*. 2010.
- Finite element analysis of the behaviour of microvoids in the cement mantle of cemented hip stem: Static and dynamic analysis. M.M. Bouziane, B. Bachir Bouiadjra, S. Benbarek, M.S.H. Tabeti, T. Achour. *Materials & Design. Volume 31, Issue 1, January 2010, Pages 545-550.*
- Finite element analysis of interfacial crack behaviour in cemented total hip arthroplasty. T. Achour, M.S.H. Tabeti, M.M. Bouziane, S. Benbarek, B. Bachir Bouiadjra, A. Mankour. *Computational Materials Science Volume 47, Issue 3, January 2010, Pages 672-677.*
- Analysis of the effect of load direction on the stress distribution in dental implant. N. Djebbar, B. Serier, B. Bachir Bouiadjra, S. Benbarek, A. Draï. *Materials & Design, Volume 31, Issue 4, April 2010, Pages 2097-2101.*

2013

- Numerical analysis of the crack growth path in the cement mantle of the reconstructed acetabulum. Smaïl Benbarek, Bel Abbes Bachir Bouiadjra, Bouziane Mohamed El Mokhtar, Tarik Achour, Boualem Serier. *Materials Science and Engineering: C*. 2013

Skills

Softwares :

- ABAQUS
- Matlab
- SolidWorks
- Origins

Languages :

- **English** : Average.
- **French** : Fluent.
- **Arabic** : Fluent.

Competence Fields :

- Computational Mechanics
- Mastering the CAD tool(computer aided design) ABAQUS
- Fracture mechanics simulation
- Damage mechanics simulation
- Programming the materials behavior using subroutines(UMAT, USDFLD, DLOAD, ...etc)
- Mastering the "abaqus scripting interface " tool to realize parametric studies.

Research Field

My primary area of interest is the study of the stability of the hip prosthesis, fracture and damage of the orthopedic cement and the dynamic and static analysis. Currently, I am working on the numerical implementation of the bone fracture.

Communications

International :

- Congrès français de mécanique(CFM 2007). Grenoble-France.
- 17th European conference on fracture. 2-5 september 2008 Brno Czech republic.
- Congrès français de mécanique(CFM 2009). Marseille-France(communication acceptée).
- The effect of crack emanating from microvoid and bone inclusion in cemented total hip replacement. M.M. Bouziane. B.Bachir bouiadjra N.Bensedik, S.M.H. Tabeti., B.Serier, S.Benbarek. 6th International Conference on Advanced Computational Engineering and Experimenting, ACE-X 2012.

National :

- First national conference on mechanics and engineering systems boumerdes2007(NCMES'07).
- 2^{ème} congrès national de mécanique(CNM'2). Constantine 2008.
- Influence de l'état de marche sur le comportement d'une fissure émanant d'une microcavité dans le ciment de l'acetabulum. A.FLITTI, D.OUINAS, S.BENBAREK, N.BENDRIF. congrès national de mécanique et industrie. 2012.
- Effet des défauts du ciment orthopédique sur le comportement dynamique de la prothèse totale de hanche. N.BENDRIF, D.OUINAS, M.FLITTI, S.BENBAREK. congrès national de mécanique et industrie. 2012.
- Effet des défauts volumiques sur la répartition des contraintes dans le ciment orthopédique des prothèses totales de hanche. S.BENBAREK, B.BACHI BOUIAJRA, B.SERIER, T.ACHOUR, M.M.BOUZIANE. Congrès national de mécanique et industrie. 2012.
- Analyse du paramètre d'endommagement autour d'une cavité dans le ciment orthopédique des prothèses totales de hanche. A.SAHLI, S.BENBAREK, B.BACHIR BOUIAJRA, B.SERIER, C.CHERFI. congrès national de mécanique et industrie. 2012.
- Effet de la présence d'un défaut type inclusion osseuse sur l'endommagement dans le ciment orthopédique(PMMA) de la prothèse totale de hanche. M.CHERFI, S.BENBAREK, B.BACHIR BOUIADJRA, B.SERIER A.SAHLI. Congrès national de mécanique et industrie. 2012.