

# MEOR IQRAM MEOR AHMAD

## Senior Lecturer (Dr.)



### RESEARCH

Experience conducting research on mathematical modelling of materials using UMAT subroutine and ABAQUS. Also, research interest is in structural integrity, fracture damage, creep damage, creep crack growth and XFEM. Current research work is on railways monitoring assessment using fibre optical sensor for stress-strain analysis based.

### ACADEMIC QUALIFICATIONS

- **B.Eng.** (Mech.) Universiti Kebangsaan Malaysia, UKM (2013)
- **Ph.D.** (Mech.) University of Sheffield, United Kingdom (2019)

### EXPERTISE

Computational Damage Mechanics  
Structural Integrity  
Creep Failure  
FEM and XFEM

### RESEARCH GROUP

- Instrumentation, Dynamics and Control of Engineering Systems (INDICES)

For list of publications and current research grants, please click [UKM Sarjana](#).

[UKM Sarjana](#)

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### RESEARCH AT A GLANCE

#### 1. Material damage modelling (void+crack)

RuX model:  

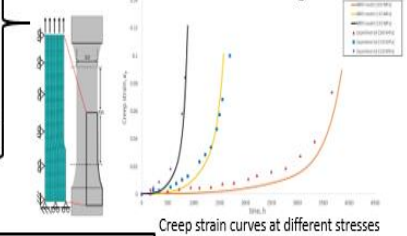
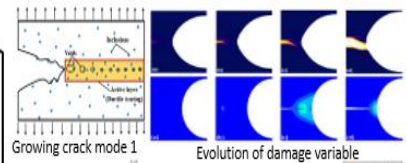
$$\varphi = \frac{q}{1-f} - R(\epsilon_{eq}) + f\sigma_1 D e^{\left(\frac{\sigma_m}{(1-f)\sigma_1}\right)}$$

MRR model:  

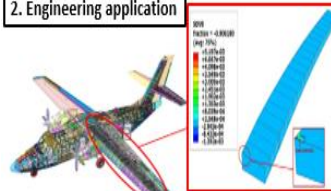
$$\epsilon_{ij}^c = \frac{3}{2} \epsilon_{ij} \left[ \frac{1}{\sigma_0} \left( \frac{\sigma_{eq}}{1-f} - R(\epsilon_{eq}) + D\sigma_1 f e^{\left(\frac{\sigma_m}{(1-f)\sigma_1}\right)} \right)^{n-1} \frac{1}{3} d\epsilon_{ij} \delta_{ij} + d\epsilon_{ij} n_{ij} \right]$$

XFEM model:  

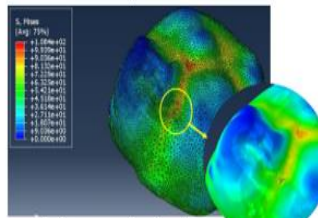
$$u = \sum_{i=1}^n N_i(x) u_i + \sum_{j=1}^m N_j(x) R(\xi) a_j + \sum_{k=1}^{m_1} N_k(x) \sum_{a=1}^{m_1^f} F_a^1(x) b_k^{a1} + \sum_{l=1}^{m_2} N_l(x) \sum_{a=1}^{m_2^f} F_a^2(x) b_k^{a2}$$



#### 2. Engineering application

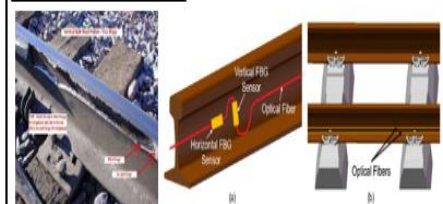


Crack in wingbox structure

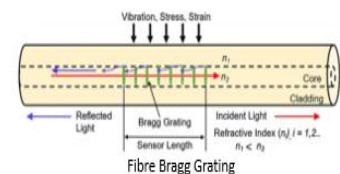


Crack detection in dental application

#### 3. Current research work



Monitor rail track on site



Fibre Bragg Grating