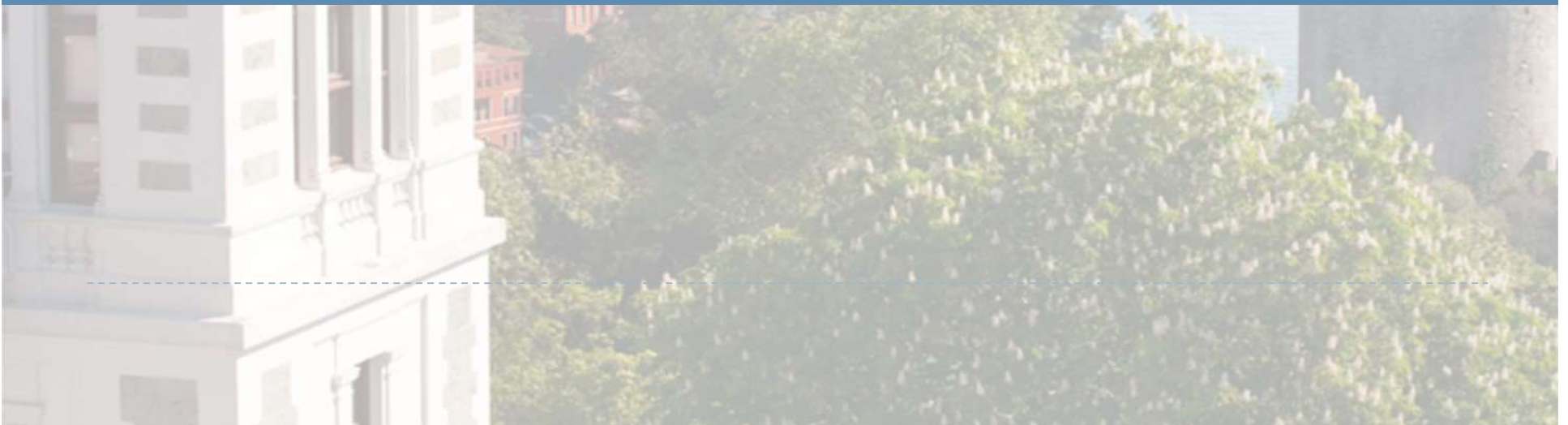


# Research at BU – Civil Engineering

## Research in Construction Materials



## *Urban transformation of Istanbul – Use of recycled aggregates -*

Earthquake risk!

Replacement of old  
buildings with newly  
made buildings!

Tonnes of **recycled  
materials** from  
demolished buildings!

**Objective;** to increase  
the use of recycled  
aggregates

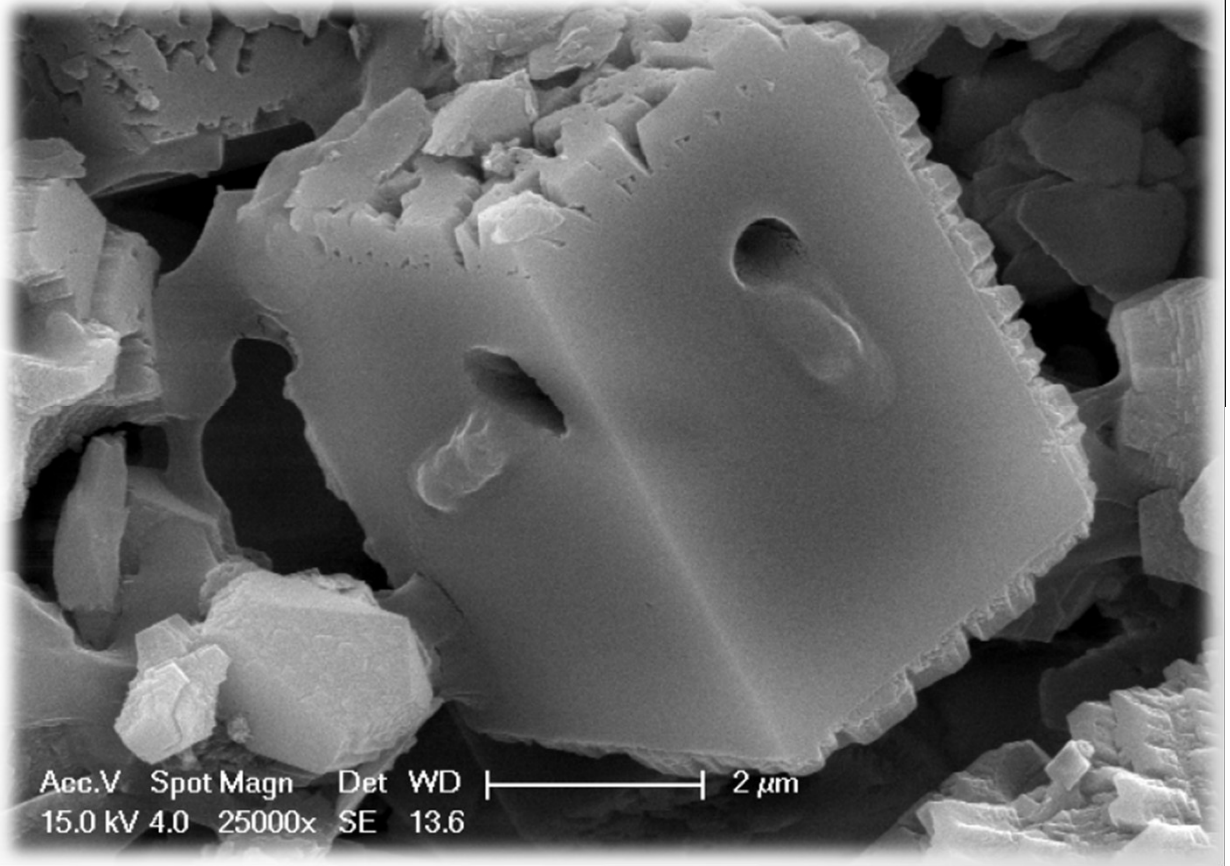


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## *Urban transformation of Istanbul – Use of recycled aggregates -*

- *Performance of recycled aggregates under dynamic loads is investigated*
- *Treatment of recycled aggregates by using bacterial surface treatment*



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# *Hazards in the city – Characterization of re-cured fire damaged concrete*

Istanbul Fire Brigade report state that more than 15000 structural fires occurred in 2016.

All the world → Millions of structural fires per year

**Objective ;** to increase residual strength and stiffness by applying water curing after fire exposure

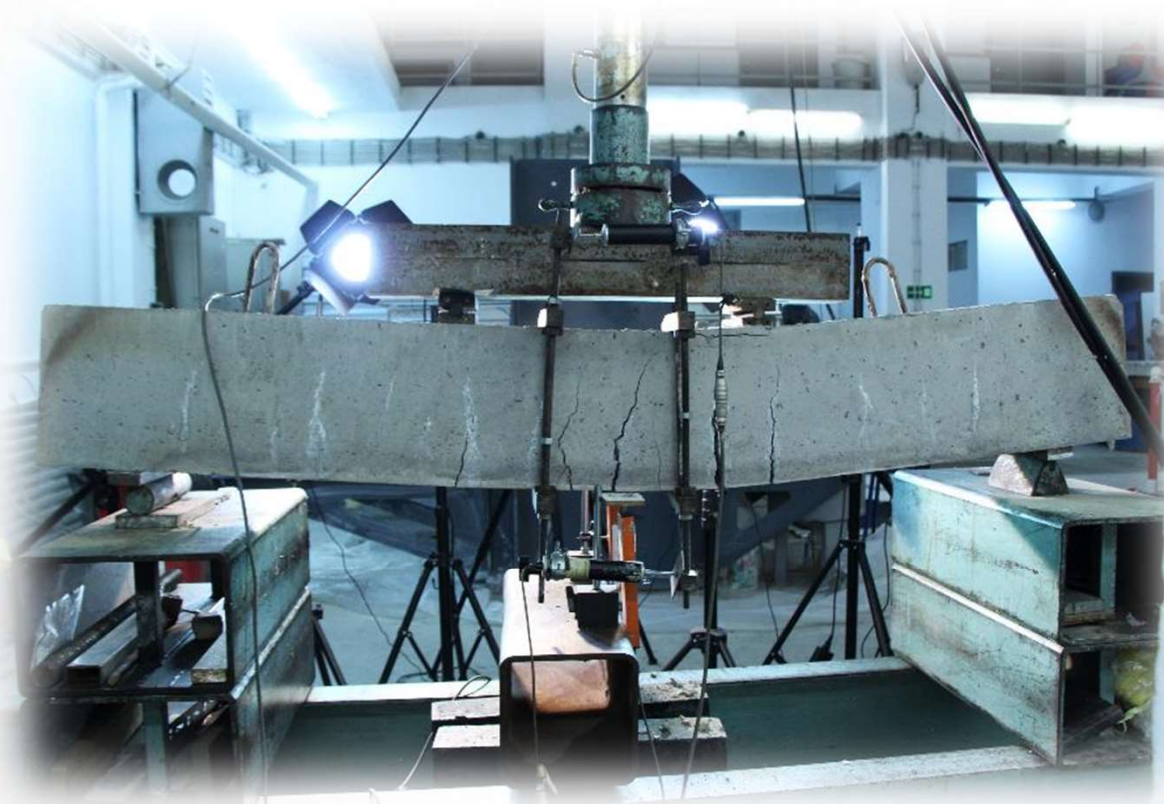
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*Hazards in the city –  
Characterization of re-cured fire damaged concrete*

Water curing of fire exposed concrete results in increased residual strength and stiffness



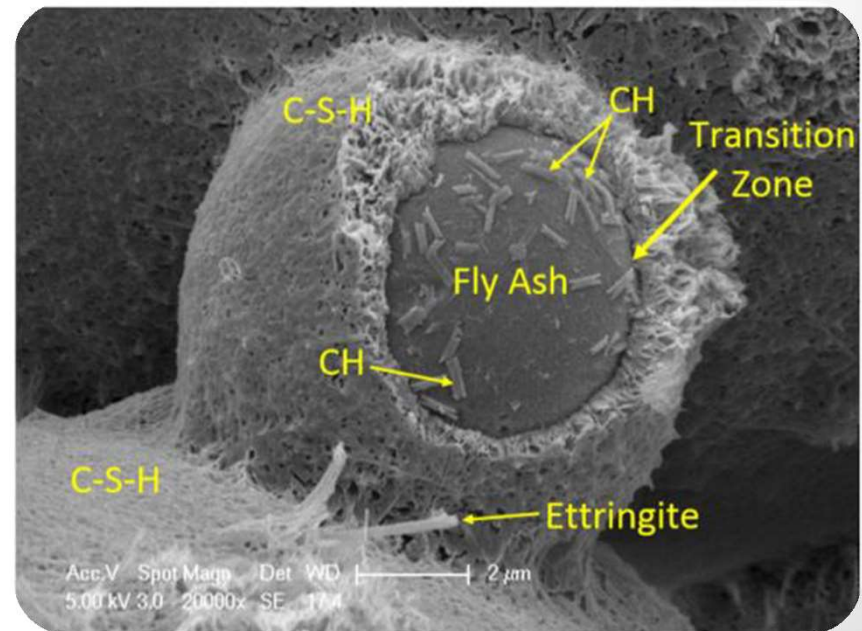
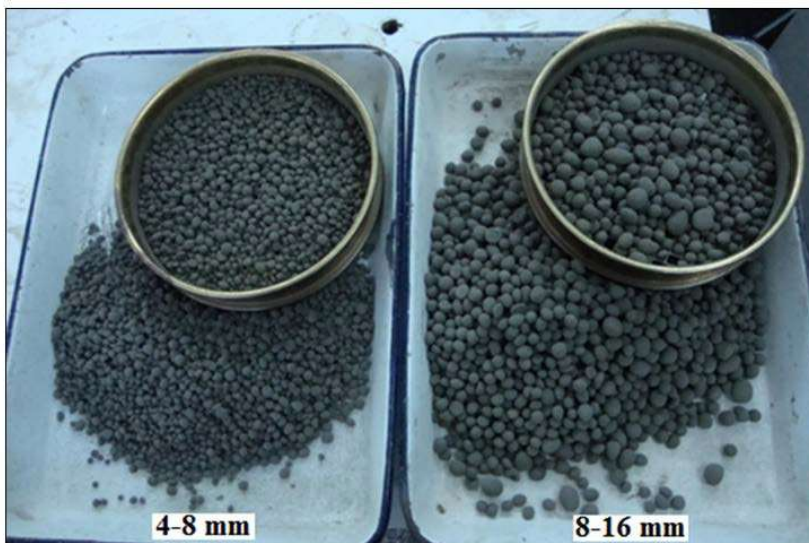
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# Environment – Limited resources of the planet world

## Artificial lightweight aggregates – cold bonded fly ash pellets

Objective; to save natural aggregate resources by using man – made cold bonded fly ash pellets

- Fly ash pellets are man made aggregates



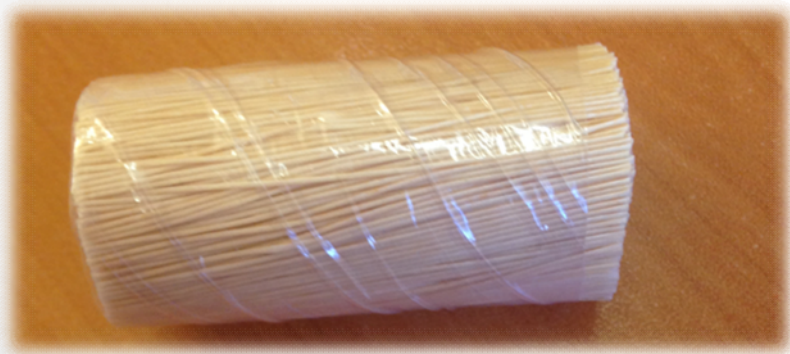
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# *Infrastructure – sustainable pavements*

## *Fiber reinforced concrete pavement design*

- Create sustainable pavements by using fibers
- Use of structural nylon fibers for increasing fatigue/impact performance

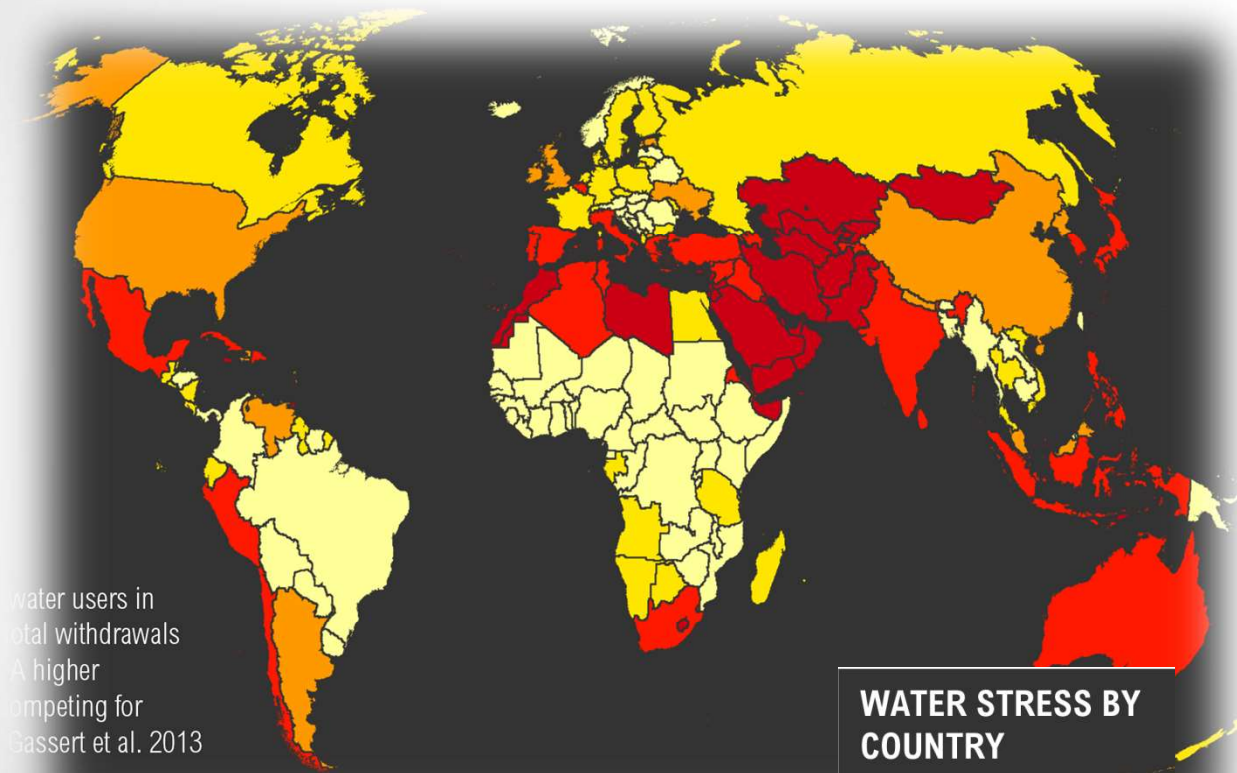


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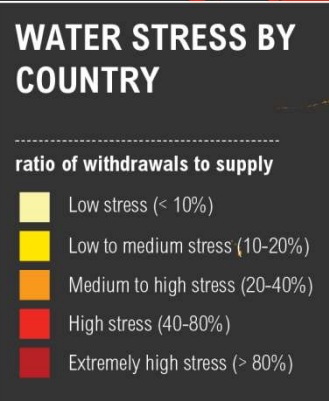
# *Water shortage in the world - Use of seawater as the mix water in concrete*

Water shortage in the middle east region will become obvious in the next 20 year.

Objective ; to become familiar with the effects of seawater usage as the mix water in concrete.



Water users in total withdrawals  
A higher competing for  
Gassert et al. 2013



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