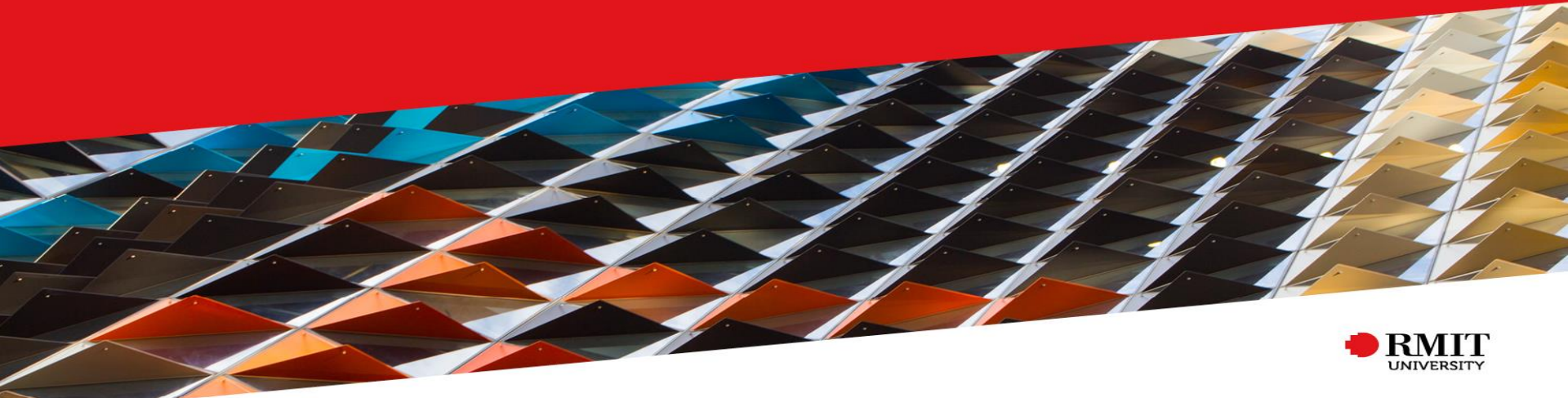


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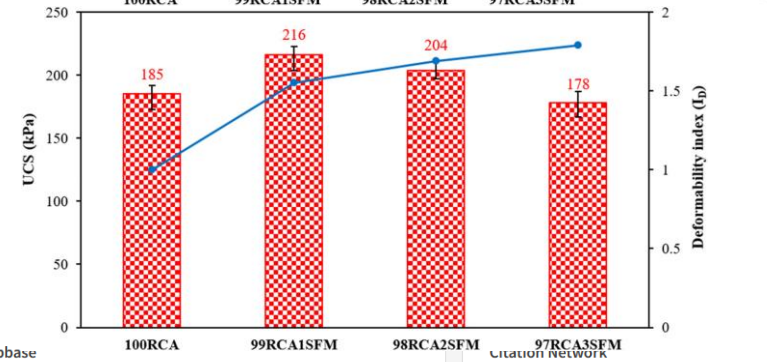
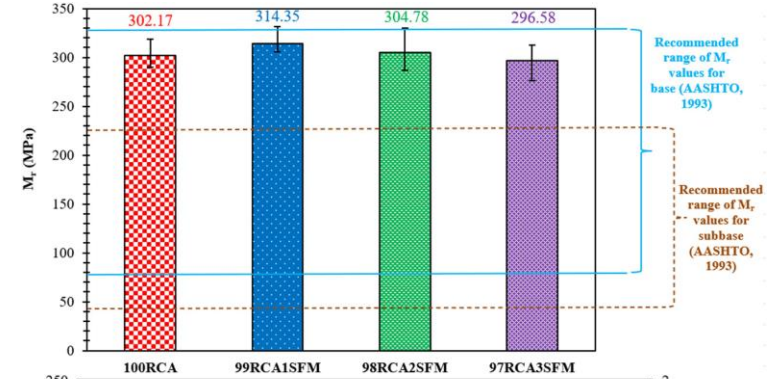
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Repurposing Healthcare Waste: Transforming Plastic-Based PPE into Construction Materials



Repurposing of COVID-19 single-use face masks for pavements base/subbase. Science of the Total Environment, (2021).



Science of the Total Environment

Volume 769, 15 May 2021, 145527



Repurposing of COVID-19 single-use face masks for pavements base/subbase

By: Saberian, M (Saberian, Mohammad) [1]; Li, J (Li, Jie) [1]; Kilmartin-Lynch, S (Kilmartin-Lynch, Shannon) [1]; Boroujeni, M (Boroujeni, Mahdi) [1]

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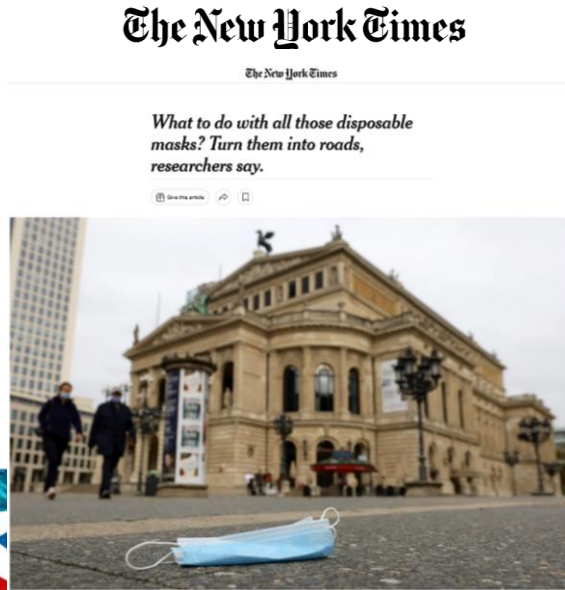
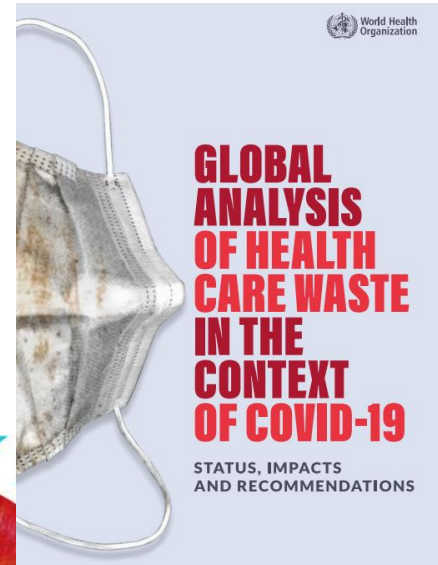
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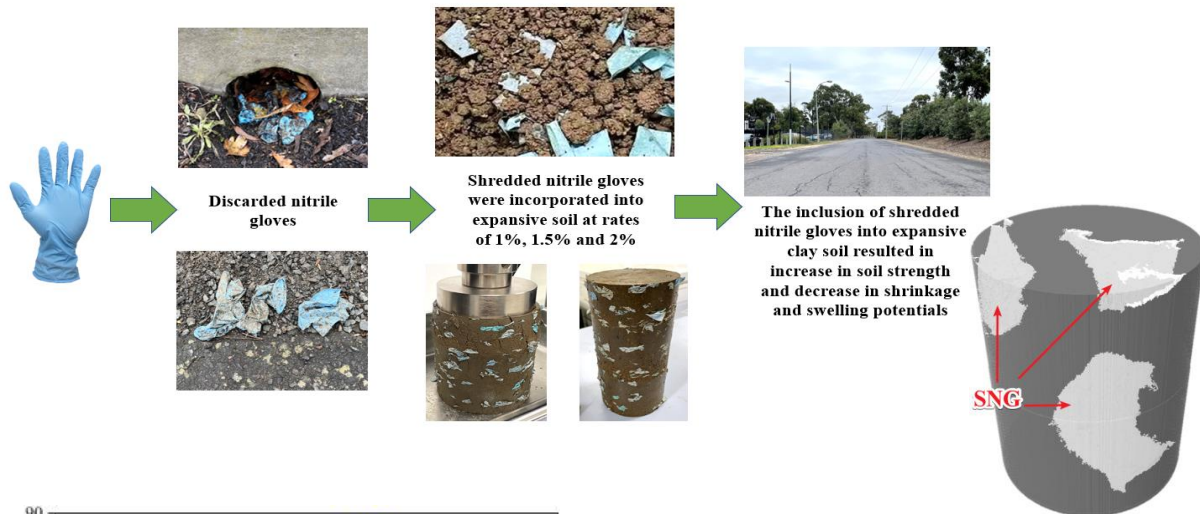
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Repurposing of COVID-19 single-use face masks for pavements base/subbase. Science of the Total Environment, (2021).

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Reusing COVID-19 disposable nitrile gloves to improve the mechanical properties of expansive clay subgrade: An innovative medical waste solution. Journal of Cleaner Production, (2022).



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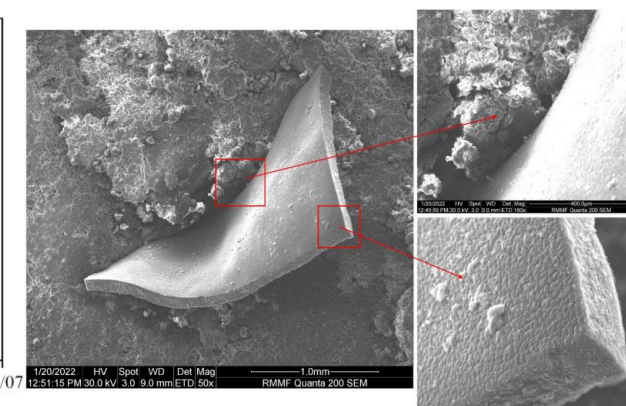
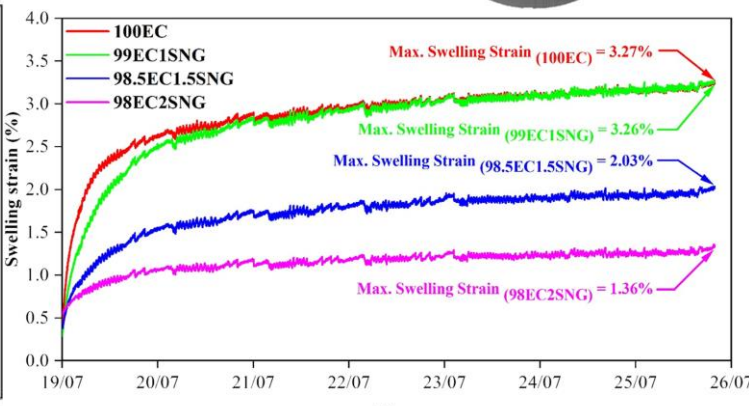
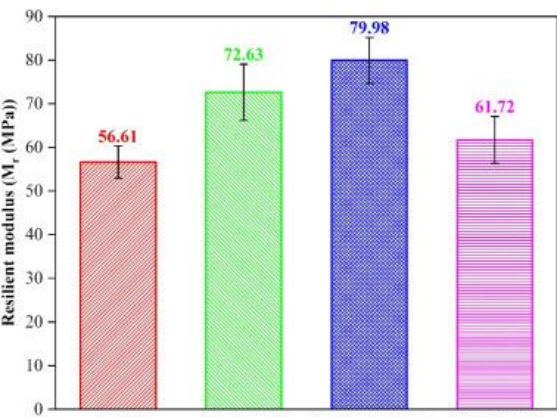
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Use of COVID-19 single-use face masks to improve the rutting resistance of asphalt pavement

George Wang^a, Jie Li^b, Mohammad Saberian^b, Md. Hasibul Hasan Rahat^a, Carol Massarra^a, Chelsea Buckhalter^a, Jodi Farrington^a, Tony Collins^c, Jeffrey Johnson^d

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Disinfection of face masks



Melting the face masks



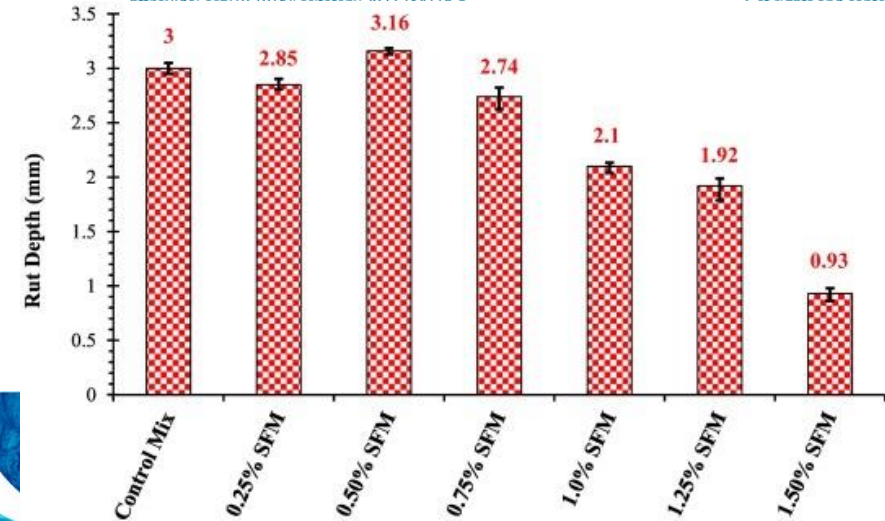
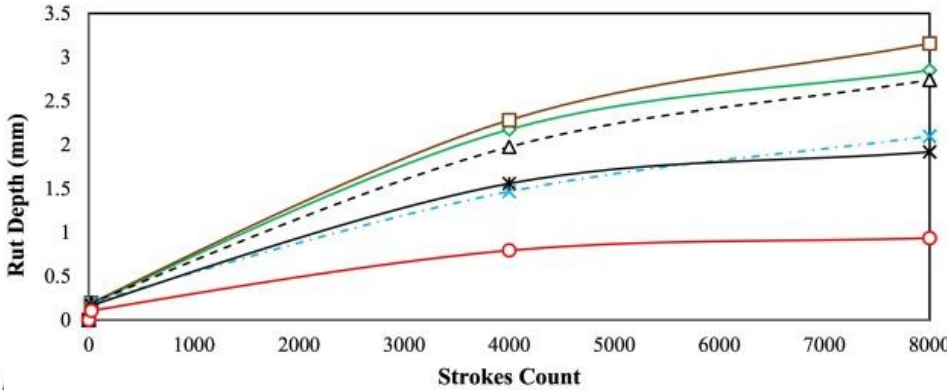
Shredding face masks after the cooling/hardening



Mixing face masks with HMA

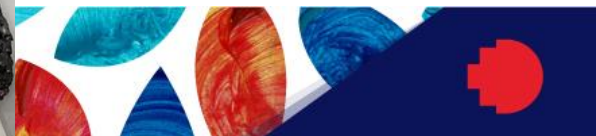
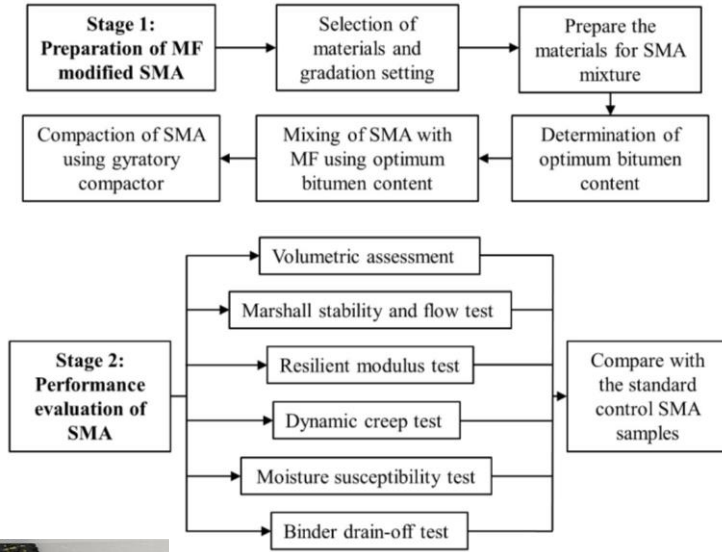
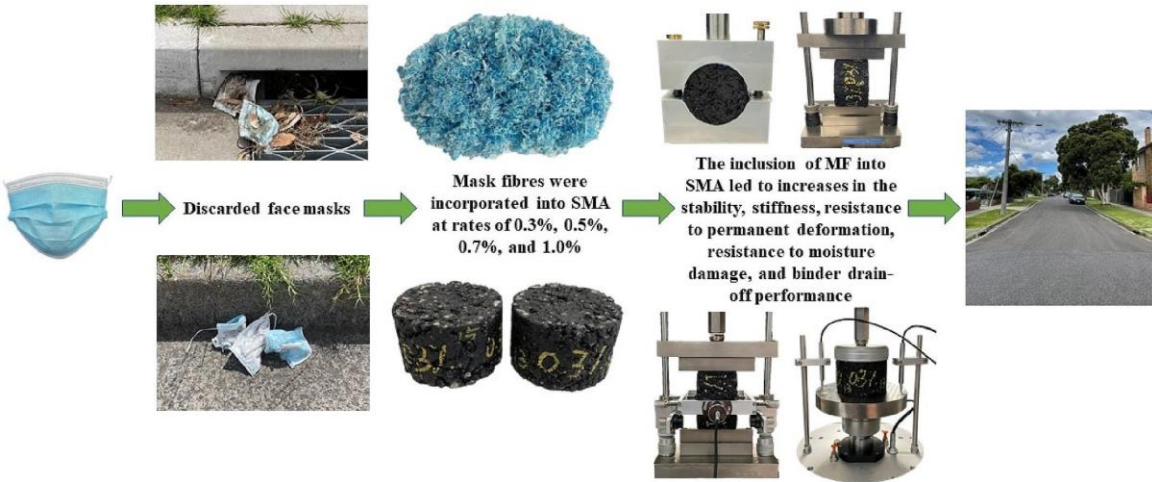


Making HMA samples containing face masks



—◇— 0.25% SFM
 —□— 0.50% SFM
 --△-- 0.75% SFM
- -x- - 1.0% SFM
 - * - 1.25% SFM
 - ○ - 1.50% SFM

Sustainable use of COVID-19 discarded face masks to improve the performance of stone mastic asphalt. Construction and Building Materials.





0 min 165 °C 2 mins 165 °C 4 mins 165 °C 6 mins 165 °C 8 mins 165 °C 10 mins 165 °C 1 hour 165 °C



0 min
165 °C



2 mins
165 °C



4 mins
165 °C



6 mins
165 °C



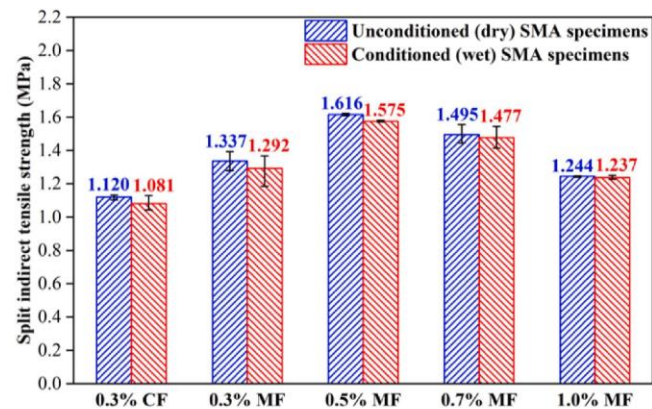
8 mins
165 °C



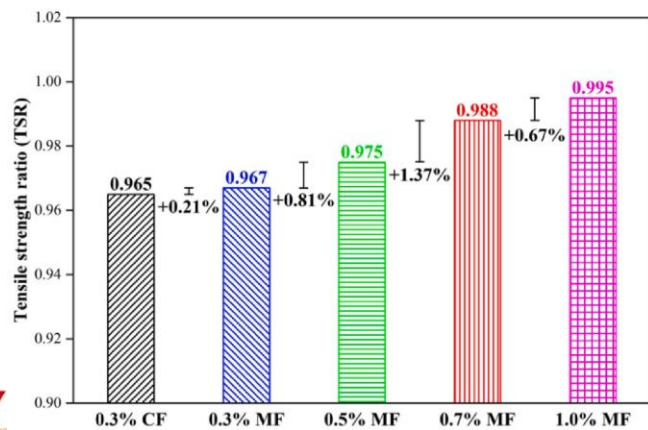
10 mins
165 °C



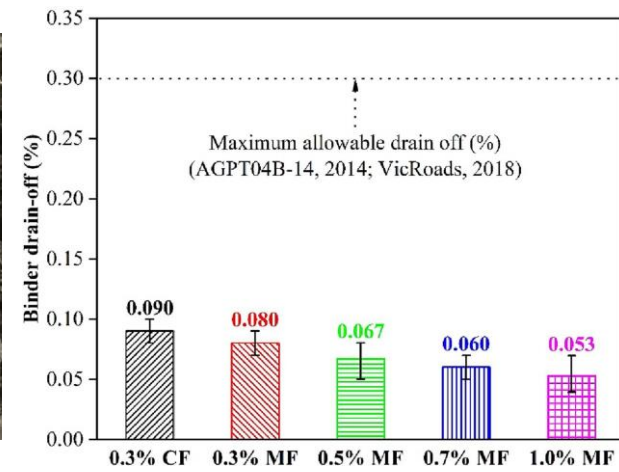
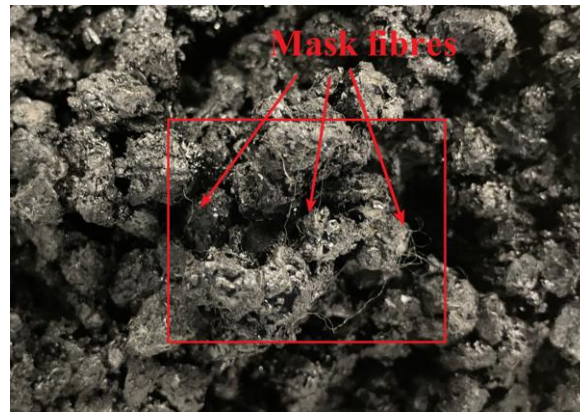
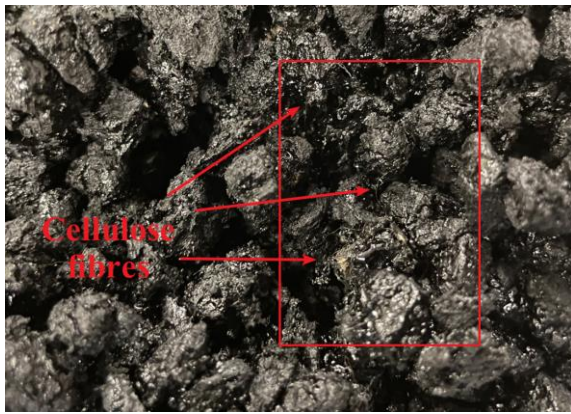
1 hour
165 °C



(a)



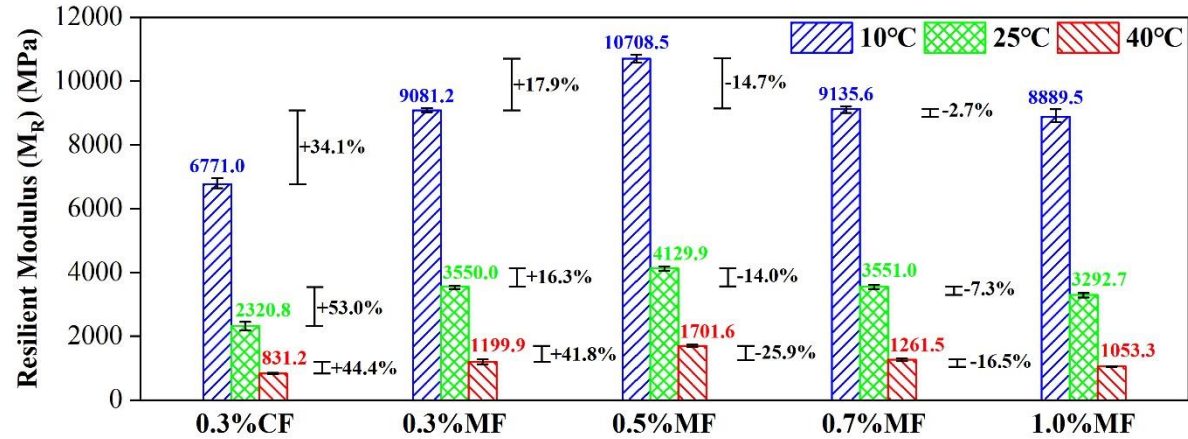
(b)



Sustainable use of COVID-19 discarded face masks to improve the performance of stone mastic asphalt

Jiasheng Zhu^{a1}, Mohammad Saberian^{a1}, Jie Li^a, Ehsan Yaghoubi^b, Md Tareq Rahman^c

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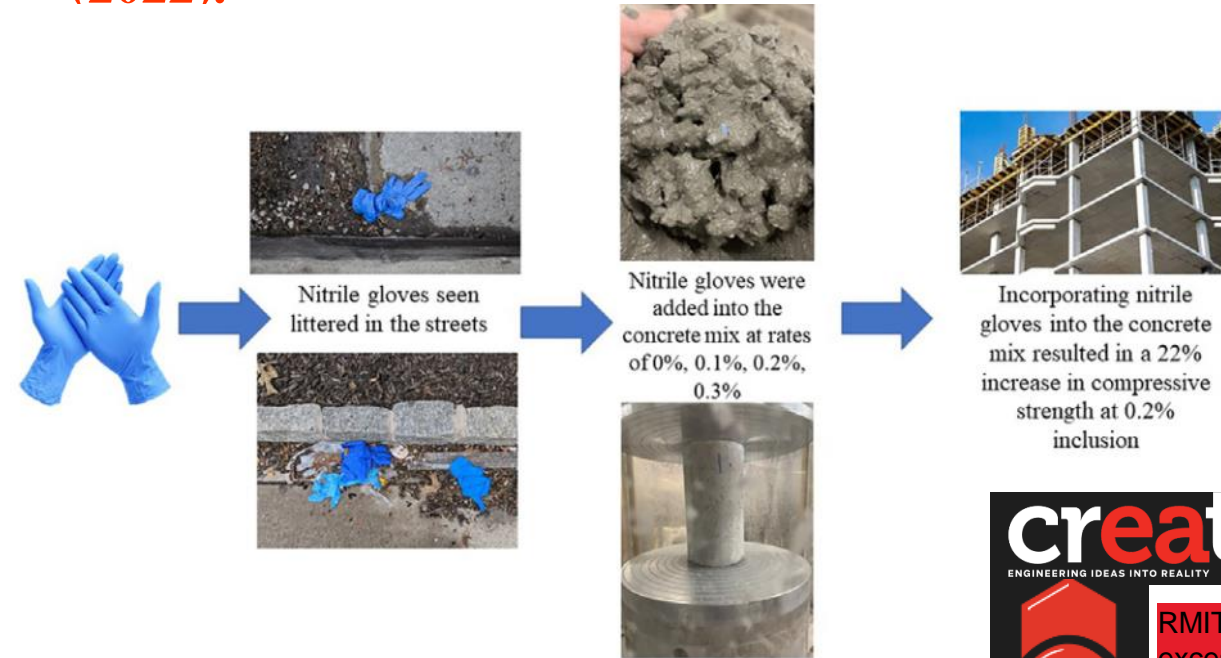


Preliminary evaluation of the feasibility of using polypropylene fibres from COVID-19 single-use face masks to improve the mechanical properties of concrete. *Journal of Cleaner Production*, (2021).

- Shredded face masks show very good bond formation with the cement matrix
- The inclusion of 0.20% by volume of shredded surgical masks to concrete provided 17% improvement in the compressive strength of concrete



Application of COVID-19 single-use shredded nitrile gloves in structural concrete: Case study from Australia. Science of the Total Environment, (2022).



ABC TV live interview (25/8/2022)



NEWS heraldsun.com.au

Daily Mail



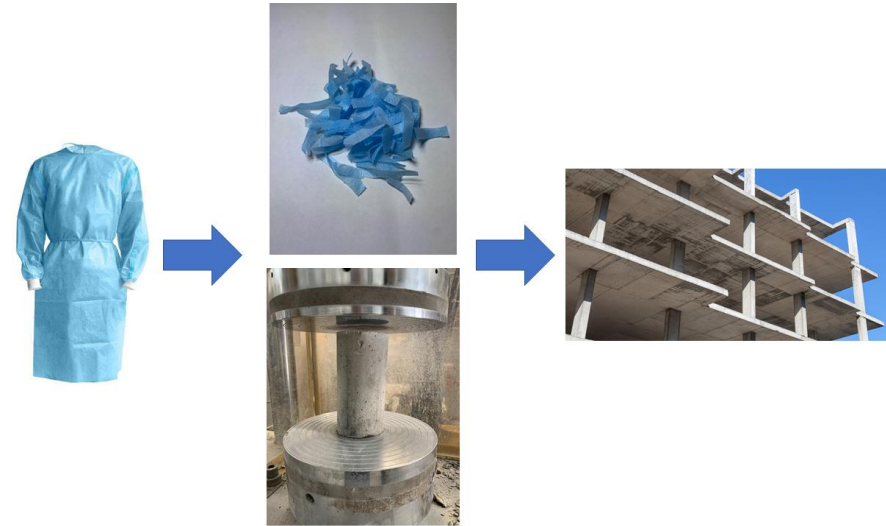
RMIT researcher charts path to circular economy using excess PPE (3/11/2022)

Turning waste PPE into concrete (27/9/2022)

Rubber hits the road in 'recycled' concrete (14/9/2022)

A sustainable approach on the utilisation of COVID-19 plastic based isolation gowns in structural concrete. Case Studies in Construction Materials, (2022).

- Shredded isolation gowns provided an excellent bond performance with the cement matrix.
- Addition of 0.30 vol% of shredded nitrile gloves increased the concrete compressive strength by 15.5% compared to that of the ordinary Portland cement concrete



Thank you

