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## Discussion

# Reply to the discussion by A. Demirbas of the paper “The removal of phosphate ions from aqueous solution by fly ash, slag, ordinary Portland cement and related blends”<sup>☆</sup>

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The authors would like to thank Prof. Demirbas for his interesting comments on our paper. In our work, especially the batch experiments referred to, phosphate removal was studied at a pH of 9. At this pH value, the phosphate ions are predominantly  $\text{HPO}_4^{2-}$ . Due to the nature of the adsorbent materials used, removal most probably occurs through tricalcium phosphate precipitation.

As Prof. Demirbas correctly pointed out, the presence of fluoride, magnesium and carbonate ions, together with the

calcium and phosphate in the solution could also lead to the formation of calcium hydroxyapatite. However, in the absence of the former three, we believe that tricalcium phosphate was the preferred precipitation product.

It will nevertheless be interesting to verify this experimentally, and his comments have certainly pointed us to additional work in this regard that we intend to pursue in the near future. This will probably include speciation studies.

<sup>☆</sup> Cem. Concr. Res. 32 (12) (2002) 1889–1897.

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