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Type: Poster

Conductive Nb-doped TiO_2 produced from ilmenite digested in hydrochloric acid

Niobium doping of TiO_2 creates a conductive material with possible applications in, for example, energy storage, hydrogen production, and catalysis. When TiO_2 is precipitated from HCl solutions containing minor Nb, the Nb in solution is quantitatively deposited with the TiO_2 . Here, we investigate the structure of Nb doped in anatase and rutile produced from ilmenite digested in hydrochloric acid. XAS are used to characterise the environment of TiO_2 doped with 0.08 at-% Nb. The data show structural differences between Nb-doped anatase and rutile and demonstrate that Nb occupies a Ti site in TiO_2 with no near neighbours of Nb. Hydrolysis of Ti and Nb from acid solution, followed by calcination, leads to a well dispersed doped material, with no segregation of Nb. Production of Nb-doped TiO_2 by this method is a promising candidate to satisfy future demand for large quantities of this material where low-cost production from readily available natural resources is highly desirable.

Level of Expertise

Expert

Presenter Gender

Man

Pronouns

He/Him

Do you intend to attend UM2022

In person - Melbourne

Students Only - if available would you be interested in student travel funding

Students Only –Do you wish to take part in the Student Poster Slam

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Yes

Primary authors: Dr KAPPEN, Peter; Dr SIZELAND, Katie; WALLWORK, Kia (ANSTO); HAVERKAMP, Richard (Massey Univeristy)

Presenter: Dr KAPPEN, Peter

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