

Abstract Submitted  
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**Charge Separation in layered Titanate Nanostructures: Effect of Ion Exchange induced Morphology Transformation**<sup>1</sup> O. DIWALD, A. RISS, H. GROTHE, Vienna University of Technology, Institute of Materials Chemistry, J. BERNARDI, Vienna University of Technology, USTEM, E. KNOEZINGER, Vienna University of Technology, Institute of Materials Chemistry, IMC TU WIEN TEAM — Morphology changes induced by surface chemistry can provide important insights into photoexcitation processes on solids which are critical to photovoltaic and photocatalytic applications. We investigated charge separation processes on  $\text{Na}_2\text{Ti}_3\text{O}_7$  nanowires and scrolled up  $\text{H}_2\text{Ti}_3\text{O}_7$  nanotubes, two types of morphologies which by means of acid/base treatment can reversibly be transformed into each other. Some of the competitive processes photoexcited states undergo can be tracked by means of electron paramagnetic resonance and photoluminescence spectroscopy. A complementarity between efficient charge separation and radiative recombination of photoexcited states [1] was observed and clearly demonstrates the critical influence of morphology and interlayer composition on the photoelectronic properties of layered oxide nanostructures [2]. [1] Riss et al. *Nano Lett.* **2007**, *7*, 433-438. [2] Riss et al. *Angew. Chem. Int Ed.* **2007**, anie.200703817, in press

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