Photo-electrochemical dissolution: In search of hot holes

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Plasmonic nanomaterials have promise as photocatalysts because of the diversity of reactions stemming from their unique light-matter interaction. The same properties that make plasmonic particles active catalysts make them less electrochemically stable. I will discuss recent work in which we studied the light-assisted electrochemical dissolution of gold nanorods (AuNRs) in a NaCl electrolyte. Our results suggest that AuNR dissolution can occur through hot-carrier generation. I will also discuss how heterogeneity contributes to broadening of the overall dissolution potential of AuNRs.