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## Nanostructures growth on c-Si substrate by thermal dewetting of Pd and Al thin films

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Nanomaterials are intensively researched due to a number of superior properties such as opto - electronic, mechanical, higher ratio of surface - to - volume ratio, etc. compared to those of their bulk counterparts. The objective of this study is to induce Si nanostructures by thermal dewetting of selected metals on c-Si substrate. Acid - etched and non - treated Si substrate were both useful in order to explore the effect of natives oxide on the growth of the nanostructures. Al and Pd thin film with thickness ranging between 5 and 20 nm were grown on c-Si (100) by electron beam evaporation. The films were thereafter isothermally annealed in vacuum at 580 0C for four hours and at 600 0C for two hours, for Al and Pd respectively. The induced nanostructures were characterized by SEM for both structural and elemental composition, XRD for phase transformation and crystallinity, UV-visible spectroscopy for optical properties and Hall effect measurements for electrical properties. Preliminary results show that while effective dewetting in individual droplets and larger island is achieved with Pd, Al induced nanostructures show small grains that evolve in much bigger coalesced but interconnected features. Our contribution will discuss the effect of the metal layer thickness as well as the effect of the native oxide on the induced nanostructures.

**Apply to be considered for a student award (Yes / No)?**

Yes

**Level for award (Hons, MSc, PhD, N/A)?**

PhD

**Main supervisor (name and email) and his / her institution**

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**Would you like to submit a short paper for the Conference Proceedings (Yes / No)?**

Yes

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