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## A Steady State Model For Interfacial Reaction And Binary Diffusion In Si-Pd System

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# Abstract content <br> &nbsp; (Max 300 words)<br><a href="http://events.saip.org.za/getFile.py/atarget="\_blank">Formatting &<br>Special chars</a>

A steady state model that explains an interfacial interaction and diffusion in binary couple of a-b system is proposed in this article. Within the framework of the model, a-atoms diffuse from a-layer of the binary system toward the b-layer and react with b-atoms to form ab-atoms. The layer of ab-atoms that grows on the b-layer, at first, is initially governed by chemical reaction and as time passes it becomes diffusion controlled. The concentration of a-atoms changes as time progresses because they are the dominant diffusing species in the binary system. But the number of b-atoms per unit volume of b-layer remains unchanged because we assume that they are practically immobile. During the chemical controlled phase of the process, the growth of ab-atomic layer is directly proportional to the annealing time. As diffusion reaction dominates the process, the ab-atomic layer thickness increases parabolically with the annealing time.

We, therefore, use our model to estimate the thickness of growth of ab-atomic layer with the corresponding critical annealing time at the point of transition between linear and parabolic growth process of the layer. The interfacial reaction and diffusion in binary Si-Pd system is also discussed in line with the theory of our model.

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PhD

### Main supervisor (name and email)<br>and his / her institution

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#### Would you like to <br>> submit a short paper <br>> for the Conference <br>> Proceedings (Yes / No)?

Yes

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