

ผู้สัมผัสสร้างโดยวิธีขูบนิเกิลและทองแดงบนเชลแสงอาทิตย์  
และหัวครุ้งสีอัลฟ่าชนิดซีลิกอน



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NICKEL AND COPPER PLATED CONTACTS ON SILICON SOLAR CELLS

AND ALPHA-RADIATION DETECTORS

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## หัวข้อวิทยานิพนธ์

ผู้สัมผัสรับรู้โดยวิชูบัน กีลและท่องແດນບນ ເຊລແສງອາທິຖຍໍ ແລະຫວັດຮັງສີອັຈຸ

ย่อผลิต

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ផ្សេវប្រកាសនទ្រាងាយ ទន.មនទន សរសើរពីរាជរដ្ឋាភិបាល

## อาการที่ปรึกษาตัว

ដ្ឋានសាស្ត្រ និងបណ្តុះបណ្តាល រាជការ នគរាមេន

ภาควิชา

ପ୍ରକାଶକ

ปีการศึกษา

2525



ບາກສົດບ່ອ

วิทยาพิพาร์ทีส์ เกี่ยวกับการสร้างและศึกษาสัมบัติโลหะ-ชีลิกอน โดยวิธีขึ้นโลหะที่ใช้สูบมีดิเกิลและหงวงแแตง ผลที่ได้มีเกิลและหงวงแแตงสามารถน้ำหนักที่ทำให้สัมบัติโลหะมีค่าเด็ด (10) เพราะมีค่าความต้านทานจำเพาะของผิวสัมบัติถึง  $\rho_c(Ni) 2.28 \times 10^{-4} \Omega\text{-cm}^2$ ,  $\rho_c(Cu) 3.02 \times 10^{-4} \Omega\text{-cm}^2$  ค่าความต้านทานจำเพาะของฐาน  $0.015 \Omega\text{-cm}$ ,  $0.013 \Omega\text{-cm}$  ตามลำดับ แต่เมื่อจากคุณสมบัติของหงวงแแตง เป็นสารที่แพร่เข้มในสารทั่วไปได้รุ่งเรือง ต่อไปนี้ จึงไม่เหมาะสมที่จะนำหงวงแแตงมาใช้ทำผิวสัมบัติทางโลหะมีค่าด้านหน้าของสิ่งประดิษฐ์ต่าง ๆ

หลังจากนี้ปัจจุบันได้นำผลตีพิมพ์สัมผัสทางโทรทัศน์มีค่ายของโลหะภัณฑ์มาประยุกต์ใช้งาน โดยสร้างเยื่อล้่งอาทิตย์ เยื่อแสงอาทิตย์มีครัวเราะแลง และหน้าวัดรังสีเซลฟ์ได้มีผลตีมาก นอกจากนี้ กล่าวมาแล้ว บริการชุดนี้เป็นบริการที่ล้ำมารถแทนกรอบวนการฉบับใบโลหะภายใต้สัญญาภาคใต้ตือกด้วย เพราจะอุปกรณ์ที่ใช้เป็นแบบง่าย ๆ สังควรลับบาย

Thesis Title                    Nickel and Copper Plated Contacts on Silicon Solar Cells  
                                  and Alpha-radiation Detectors

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## ABSTRACT

Study and fabrication of metal-silicon contacts have been done by using nickel and copper. Both metals can be good ohmic contact with silicon.<sup>(10)</sup> The good experimental results of contact resistivities measurements are  $\rho_c(\text{Ni}) = 2.28 \times 10^{-4} \Omega\text{-cm}^2$ ,  $\rho_c(\text{Cu}) = 3.02 \times 10^{-4} \Omega\text{-cm}^2$  with the 0.015  $\Omega\text{-cm}$  and 0.013  $\Omega\text{-cm}$  substrates respectively.

Owing to the fast diffusion property of copper, the use of this metal is unjustified to make the front contact of semiconductor devices.

After optimum condition for making a good nickel-silicon ohmic contact is obtained, the effort is extended to the field of applications. Solar cell, Concentrated solar cell, and Alpha-radiation detectors fabricated with this plating technique have good performances. So it is shown that, for a large area semiconductor devices, plating technique can replace metalization in vacuum. The advantages of plating technique are simple equipment and easy manipulation.

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