

## YIELD VARIATION COMPOSITE CATHODE MATERIAL FOR NI-P

Minodora Maria PASĂRE<sup>1</sup>, Nicoleta - Maria MIHUȚ<sup>1</sup>, Alin NIOAȚĂ<sup>1</sup>, Cătălina IANĂȘI<sup>1</sup>

University CONSTANTIN BRÂNCUȘI of Târgu Jiu

e-mail: [minodora\\_pasare@yahoo.com](mailto:minodora_pasare@yahoo.com)

**Keywords:** composite Ni-P, codeposition, yield,  $H_3PO_3$  concentration, the phosphorus content.

**Abstract:** Getting a layered composite Ni-P is a very complex process and depends on factors such as:  $H_3PO_3$  concentration, current density, solution pH, temperature work. Thus, Lashmore propose a codeposition Ni-P scheme. Note first that without  $H_3PO_3$  in electrolyte, the yield is lower. Evolution of yields depending on the phosphorus content is a linear variation, there is a relationship of proportionality between the two sizes.

Decrease in yield  $H_3PO_3$  increase is due to the fact that an important part of  $H_3PO_3$  come in reaction with hydrogen atoms forming informal phosphins  $PH_3$  (3).

Phosphins  $PH_3$  result come in response to the atoms of Ni existing reaction (1) and determine the nickel and phosphorus to be deposited (reaction 4). So the variation in the yield of  $H_3PO_3$  can be attributed to the formation of the first phosphins, then action with nickel atoms in such a determining existential reaction of co-deposition of Ni and P.

How variation  $H_3PO_3$  determine the variation of phosphorus included in the layer; Figure 2 shows faradic yield variation depending on the content of phosphorus layer.

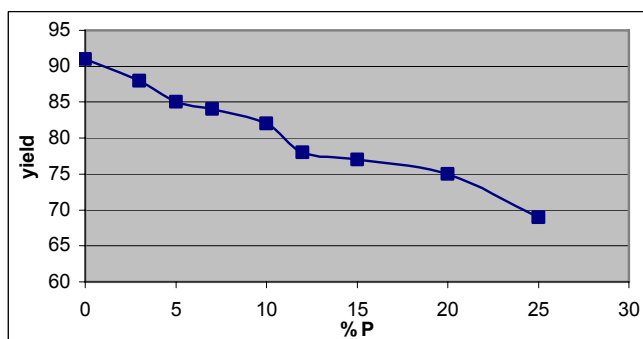


Fig. 2

Figure 2 shows that the evolution of efficiency depending on the content of phosphorus is a linear variation, existing a relationship of proportionality between the 2 sizes.

### REFERENCES

- [1] Lashmore, D.S., Pratt, K.W., (1985), *Journal Electrochem. Soc.*, 140, pag.156-158.
- [2] Aslanyan, I.R., Bonino, J-P, Celis J., (2004), *Effect of reinforcing submicron SiC particles on the wear of electrolytic NiP coatings. Part 1: uni-directional sliding*, Surface and Coatings Technology.
- [3] Pasăre M., (2002), *Determination de la durete de depots NiP charges de particules SiC*, Rapport de Stage, Ecole Nationale d'Ingenieurs de Tarbes.
- [4] Vaillant, S., (2001), These l'Institut National Polytechnique, Toulouse, pag. 59-61