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ABSTRACTS

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## P21

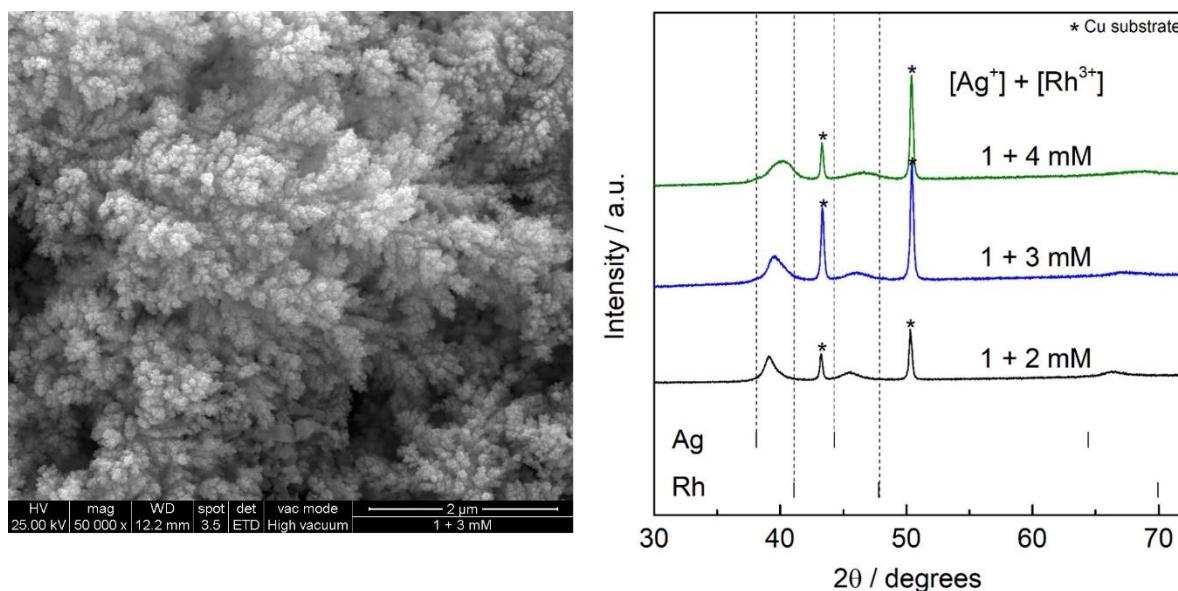
## Electrodeposition of Ag-Rh alloys

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The Ag-Rh system is characterized by the presence of a large miscibility gap, especially by a total insolubility of Rh in Ag in the solid state. Nonetheless, the preparation of Ag-Rh nanoparticles by the polyol method has been recently reported [1]. We explore here the possibility to obtain a metastable  $\text{Ag}_{50}\text{Rh}_{50}$  alloy by electrodeposition, in analogy to Cu-Rh alloys [2].



**Figure 1:** SEM image of typical morphology of Ag-Rh deposit (left) and X-ray diffractograms of selected compositions (right).

SEM investigations of an Ag-Rh deposit show a spongy material made of aggregates of submicron crystals (Fig. 1, left). The diffraction peaks are located between typical reflections of pure Ag and Rh, and shift with bath composition (Fig. 1, right). The dependence of lattice parameter on EDS composition is close to Vegard's law. Cyclic voltammograms are performed on Ag-Rh alloys with the aim to clarify their ability to absorb hydrogen, in analogy to Pd, as reported in literature [1, 3]. Preliminary results do not confirm literature claims.

[1] K. Kusada, M. Yamauchi, H. Kobayashi, H. Kitagawa, and Y. Kubota, *J. Am. Chem. Soc.* **132** (2010) 15896-15898.

[2] N. Comisso, S. Cattarin, S. Fiameni, R. Gerbasi, L. Mattarozzi, M. Musiani, L. Vázquez-Gómez, and E. Verlato, *Electrochem. Commun.* **25** (2012) 91-93.

[3] T. Yayama, T. Ishimoto, and M. Koyama, *J. Alloys Comp.* **662** (2016) 404-408.