Ti foams were produced (A to E in Table 1) by dry mixing the metal, a solid polymeric binder and a foaming agent (all in a powder form). The mixture was molded and underwent a three-step thermal treatment to foam and consolidate the material. The foams produced have open porosity and are permeable (Fig. 1). Modifying the initial powder mixture (MIX. in Table 1) and the thermal treatment conditions produce materials having different microstructures. One specimen (E) was coated with TiO$_2$ by sol-gel. Density was calculated by measuring the weight and size of the specimens, the average pore size (P. size, Table 1) was determined by image analysis while the TiO$_2$ layer thickness (Solid Ti < foams A to D < foam E). As far as surface areas were concerned, some differences between S$_j$ and S$_k$ were observed for foams C and D but still remained in the same order of magnitude. Additional studies are in progress to explain these variations.

For each material, evaluation of the double layer capacitance ($C_{dl}$) and of the roughness factor ($R$) by EIS [1] (see Table 1) were essential in order to normalize the $j_i$ values [2] displayed in Fig. 2. In this figure, it is clearly shown that corrosion resistance of the foams is not affected by the structure of the material ($1 < j_i < 1.7$ nA.cm$^{-2}$) even after a 144-hour immersion period (see foams C and D). Moreover, there is a slight improvement compared to solid titanium (Ti; polished) (4 nA.cm$^{-2}$). It must also be pointed out that foam E, coated with TiO$_2$, exhibited the highest corrosion resistance ($E_{corr} = +155$ mV SCE and $j_i = 0.8$ nA.cm$^{-2}$). Corrosion resistance for the different titanium materials is linked to the thickness of the TiO$_2$ layer formed during the fabrication process. In fact, a CV study showed that Ti passivation increases with TiO$_2$ layer thickness (Solid Ti < foams A to D < foam E).

### Acknowledgements

The authors wish to thank Vicky So, Mélanie Bolduc, and Stephan Lang (SIMS-NRC) for their contribution to the work.

### References

